STEPHENS ELECTRONICS, INC

3513 PACIFIC AVENUE, BURBANK, CALIFORNIA 91505

PHONE: (213) 842-5116

ENGINEERING COMMUNIQUE #3

JULY 21, 1980

RE: The discrepancy in high frequency record calibration when using high output tapes.

The purpose of this communique is to discuss the problem of playing back 10 kHz at zero level at 15 ips when the recorder is aligned to the NAB standard.

The original 15 ips standard included compensation for high frequency bias loss (erasure). Through the years, the NAB standard tapes have been re-calibrated to compensate for drift made in the original calibrations. Due to the improved efficiency of the top end of the latest high output tapes (Ampex 456 for example), the playback response may be +1 dB or more at 10 kHz even with no record equalization on Stephens recorder/reproducers. This is due to our superior high frequency record response.

It has come to our attention that we are not the only ones having this problem. The NAB standard for 15 ips is again in need of re-calibration. An AES Committee recognizes this and the new standard tapes may closely match the European CCIR curve.

SEI suggests in the meanwhile calibrating the playback equalization at 10 kHz to be -2 dB when referenced to 1 kHz when playing back a standard alignment tape. The alternative is to insert a high frequency roll-off network in the record electronics for compensation. This would introduce additional phase shift and a reduction in the high frequency signal-to-noise ratio.

If you have any questions please call us. We would also appreciate your response to our solution.

STEPHENS ELECTRONICS, INC.

Doug Cioce
Director of Operations

RSC
RECORDING SERVICES COMPANY
2414 W. OLIVE AVE.
BURBANK CA. 91506
(818) 843-8640
(800) 451-5614

4/20/85

JAMACA/WARNER BROS. PICTURES

TO AUDIO ENGEINEER:

HINTS ON STEPHENS OPERATION:

The machine has been aligned for +6, 30ips, 250 tape, using the sample tape given us by Steve Goldman. All functions check out 100%. If you need assistance, call RSC 800-451-5614, or (818) 843-6800, talk to Julie or Tom or Ken.

Tones have been recorded on the reel of 250 tape at the head. I suggest if they playback even close to 0 VU in Jamaca, not to realign. If realignment is necessary overbias 1 db @ 1 K for best flat frequency response. DO NOT adjust low frequency response, it should be close to 0 VU.

Enclosed is a 220 V to 110 V step down transformer for the machine. We think the Power in Jamaca is 50 hz, 220 V, so PLEASE use the transformer for the Stephens machine. Also, please try to get as much air as possible to the Power Supply since it will probably get warmer than normal running on 50 hz.

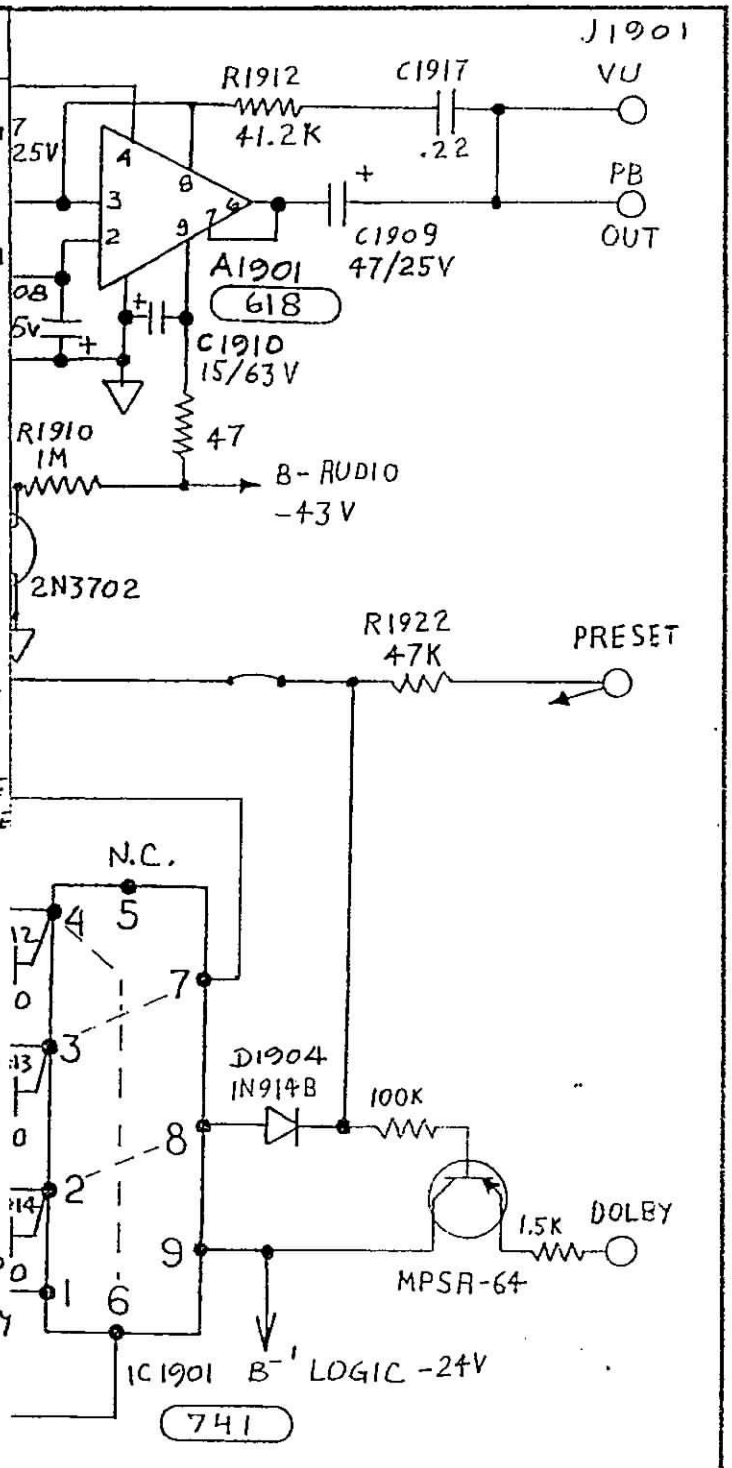
The speed of the machine uses a 60 hz crystal time base so the Jamaca 50hz. will not be a problem - only the 220V.

At the rear of the machine is a switch for external sync resolving. IMPORTANT the switch is in the "NORMAL" POSITION, at all times. Please check upon arrival in Jamaca.

To arm machine for record use the knob on the right hand side of the VU meter panel while depressing the "REC" button next to it (NOT DECK record button). This is also used for the other functions - input, Play, Mute (you won't need Mute). Depress the "play" one to deselect from record ready.

All other functions of the machine are very similar to any studio recorder, the enclosed manual covers tape threading etc. however refer to the previous paragraph for Channel select functions on the multiplexing of the VU panel.

CIRCUIT	CONN. PIN NO. CH1	CH2	CH3	CH4	NO. OF CKTS	WIRE COL
VU PB LEVEL	11B	11D	11F	11H	4	WHT/ORG
PB OUT	12A	12C	12E	12G	4	WHT/BLU
PB IN	2A	2C	2E	2G	4	WHT/GRN
SHUTTLE MUTE	13B	13B	13B	13B	1	RED/WHT
30 IPS CONTROL	6A	6A	6A	6A	1	GREY
RECORD INPUT	4A	4C	4E	4G	4	WHT/RED
PRESET	6C	6C	6C	6C	1	VIOLET
OUTPUT TO REC AMP	5B	5D	5F	5H	4	BLK/WHT
GROUND		13D	13F	13H	1	BUSS WIRE
		1D	1F	1H	1	BUSS WIRE
READ/WRITE INPUT THIS CHANNEL	8A	8C	8E	8G	4	WHT
RECORD READ/WRITE ALL CHANNELS	7H	7H	7H	7H	1	RED
$\overline{\text{SYNC}}$ READ/WRITE ALL CHANNELS	7F	7F	7F	7F	1	BLUE
INPUT READ/WRITE ALL CHANNELS	7D	7D	7D	7D	1	GRN
RECORD BUSS	6G	6G	6G	6G	1	WHT/VIO
SYNC BUSS	6E	6E	6E	6E	1	WHT/GREY
SYNC RELAY THIS CHANNEL	9B	9D	9F	9H	4	YEL
RECORD RELAY THIS CHANNEL	10A	10C	10E	10G	4	WHT/BRN
DOLBY	1B	3B	3D	7D	4	WHT/YEL
B⁻ AUDIO	3F	3F	3F	3F	1	ORG
B⁻ LOGIC	3H	3H	3H	3H	1	BRN/WHT



HERWISE:
HMS. CAPACITANCES IN MICROFARADS.

S ELECTRONICS

APPROVED BY: W. Rice

DRAWN BY Lalit

REVISED JFS 5-17-82

AMP SCHEMATIC

ELECTRONICS

DRAWING NUMBER SC-1901

11X17 PRINTED ON NO. 1000 CLEARPRINT

LED'S

ITEM CODE	DESCRIPTION	BASE PRICE	100	250	500	1000	2500
LN 21 RAHL	RED LED LAMP	.130	.104	.095	.087	.082	.079
LN 21 RCPHL	RED LED LAMP	.130	.104	.095	.087	.082	.079
LN 21 RPH	RED LED LAMP	.130	.104	.095	.087	.082	.079
LN 21 RPHL	RED LED LAMP	.130	.104	.095	.087	.082	.079
LN 28 RA	RED LED LAMP	.130	.104	.095	.087	.082	.079
LN 28 RP	RED LED LAMP	.130	.104	.095	.087	.082	.079
LN 31 GCPHL	GREEN LED LAMP	.193	.154	.141	.129	.121	.117
LN 31 GPH	GREEN LED LAMP	.193	.154	.141	.129	.121	.117
LN 31 GPHL	GREEN LED LAMP	.193	.154	.141	.129	.121	.117
LN 38 GP	GREEN LED LAMP	.193	.154	.141	.129	.121	.117
LN 41 YCPHL	AMBER LED LAMP	.193	.154	.141	.129	.121	.117
LN 41 YPH	AMBER LED LAMP	.193	.154	.141	.129	.121	.117
LN 41 YPHL	AMBER LED LAMP	.193	.154	.141	.129	.121	.117
LN 48 YP	AMBER LED LAMPS	.193	.154	.141	.129	.121	.117
LN 513 OA	ORANGE 7-SEG DISPLAY	1.925	1.540	1.401	1.286	1.209	1.170
LN 513 OK	ORANGE 7-SEG DISPLAY	1.925	1.540	1.401	1.286	1.209	1.170
LN 513 GA	GREEN 7-SEG DISPLAY	1.399	1.119	1.018	.935	.879	.851
LN 513 GK	GREEN 7-SEG DISPLAY	1.575	1.260	1.147	1.052	.989	.958
LN 513 RA	RED 7-SEG DISPLAY	1.250	1.000	.910	.835	.785	.760
LN 513 RK	RED 7-SEG DISPLAY	1.250	1.000	.910	.835	.785	.760
LN 514 OA	ORANGE 7-SEG DISPLAY	2.100	1.680	1.529	1.403	1.319	1.277
LN 514 OK	ORANGE 7-SEG DISPLAY	2.100	1.680	1.529	1.403	1.319	1.277
LN 514 GA	GREEN 7-SEG DISPLAY	1.775	1.420	1.292	1.186	1.115	1.079
LN 514 GK	GREEN 7-SEG DISPLAY	1.775	1.420	1.292	1.186	1.115	1.079
LN 514 RA	RED 7-SEG DISPLAY	1.450	1.160	1.056	.969	.911	.882
LN 514 RK	RED 7-SEG DISPLAY	1.450	1.160	1.056	.969	.911	.882
LN 516 OA	ORANGE 7-SEG DISPLAY	2.875	2.300	2.093	1.921	1.806	1.748
LN 516 OK	ORANGE 7-SEG DISPLAY	2.875	2.300	2.093	1.921	1.806	1.748
LN 516 GA	GREEN 7-SEG DISPLAY	2.425	1.940	1.765	1.620	1.523	1.474
LN 516 GK	GREEN 7-SEG DISPLAY	2.425	1.940	1.765	1.620	1.523	1.474
LN 516 RA	RED 7-SEG DISPLAY	1.588	1.270	1.156	1.061	.997	.966
LN 516 RK	RED 7-SEG DISPLAY	1.588	1.270	1.156	1.061	.997	.966
LN 524 OA	ORNG 2-DIGIT DISPLAY	2.875	2.300	2.093	1.921	1.806	1.748
LN 524 OK	ORNG 2-DIGIT DISPLAY	2.875	2.300	2.093	1.921	1.806	1.748
LN 524 GA	GRN 2-DIGIT DISPLAY	2.425	1.940	1.765	1.620	1.523	1.474
LN 524 GK	GRN 2-DIGIT DISPLAY	2.425	1.940	1.765	1.620	1.523	1.474
LN 524 RA	RED 2-DIGIT DISPLAY	2.100	1.680	1.529	1.403	1.319	1.277
LN 524 RK	RED 2-DIGIT DISPLAY	2.100	1.680	1.529	1.403	1.319	1.277
LN 526 OA	ORANGE	3.175	2.540	2.311	2.121	1.994	1.930
LN 526 OK	ORNG 2-DIGIT DISPLAY	3.175	2.540	2.311	2.121	1.994	1.930
LN 526 GA	GRN 2-DIGIT DISPLAY	2.425	1.940	1.765	1.620	1.523	1.474
LN 526 GK	GRN 2-DIGIT DISPLAY	2.425	1.940	1.765	1.620	1.523	1.474
LN 526 RA	RED 2-DIGIT DISPLAY	2.100	1.680	1.529	1.403	1.319	1.277
LN 526 RK	RED 2-DIGIT DISPLAY	2.100	1.680	1.529	1.403	1.319	1.277
LN 5260 OA	ORNG 2-DIGIT DISPLAY	2.820	2.256	2.053	1.884	1.771	1.715
LN 81 RCPHL	ORANGE LED LAMP	.193	.154	.141	.129	.121	.117
LN 81 RPH	ORANGE LED LAMP	.193	.154	.141	.129	.121	.117
LN 81 RPHL	ORANGE LED LAMP	.193	.154	.141	.129	.121	.117

T A W ELECTRONICS, INC. 4215 W. BURBANK BLVD. BURBANK, CALIFORNIA 91505

L.A. (818) 846-3911 TELEX : 71-3718354 F.O.B. BURBANK, CALIFORNIA
NO. CA. (408) 738-1795 TWX : 310-3718354 PRICES SUBJECT TO CHANGE WITHOUT NOTICE
OUT CA. (800) 255-9538 TERMS NET 30 DAYS

ITEM CODE	DESCRIPTION	RESISTANCE RANGE	PACKAGE (MIN.)	BASE PRICE	600	1000	5000
CARBON FILM T(JAPAN), JF(JAPAN), & PF(PIHER)							
T 10J	1/8W 5% CF RES	2.2Ω to 1 meg	200	16.84	14.72	11.78	10.72
T 10J	1/8W 5% CUT & FORM	2.2Ω to 1 meg	1000	18.11	15.83	12.67	11.53
T 10J	1/8W 5% CF TAPE/REEL	2.2Ω to 1 meg	5000	18.52	16.19	12.96	11.79
JF 25J	1/4W 5% JF RESISTORS	1Ω to 10 meg	200	9.14	7.99	6.40	5.82
JF 25J C/F	1/4W 5% JF C/F	1Ω to 10 meg	1000	13.47	11.78	9.42	8.58
JF 25J T/R	1/4W 5% JF T/R	1Ω to 10 meg	5000	13.90	12.15	9.73	8.85
JF 25K2	1/4W 10% JF RESISTORS	11m to 22m	200	35.79	31.29	25.03	22.78
JF 25K2 C/F	1/4W 10% JF C/F	11m to 22m	1000	37.04	32.38	25.91	23.58
JF 25J T/R	1/4W 5% JF T/R	10.1m to 22m	5000	37.48	32.77	26.21	23.86
PF 25J	1/4W 5% PF RESISTORS	1Ω to 10 meg	TAPE	11.75	10.28	8.22	7.48
PF 25J0	1/4W 5% 0 ohm RES	"0"Ω	TAPE	19.33	16.90	13.52	12.31
PF 25J2	1/4W 5% PF RESISTORS	11m to 14m	TAPE	23.05	20.15	16.12	14.67
PF 25K3	1/4W 10% PF RESISTORS	15m to 20m	TAPE	23.05	20.15	16.12	14.67
PF 25K4	1/4W 10% PF RESISTORS	22 meg	TAPE	52.80	46.16	36.93	33.61
PF 50J	1/2W 5% PF RESISTORS	.5Ω to 10m	TAPE	20.08	17.56	14.05	12.78
PF 100J	1W 5% PF RESISTORS	10Ω to 10m	TAPE	113.03	98.80	79.05	71.94
	(TAPE MINIMUM - - 100 pcs. per value)						
METAL OXIDE RSF(Micro-Japan)							
RSF 1B	METAL OXIDE 1W 5% RES	.2Ω to 120K	100/bulk	101.25	77.76	63.59	60.75
RSF 2B	METAL OXIDE 2W 5% RES	.2Ω to 120K	100/bulk	138.75	106.56	87.14	83.25
METAL FILM MK(RESISTA, W. GERMANY), PMR(PIHER, SPAIN)							
Temperature Coefficient: D(100ppm/c°) C(50ppm/c°) E(25ppm/c°) F(15ppm/c°)							
MK2-0 RN55 size	1/4W 1% MF RES 50ppm	1Ω to 9.76Ω	TAPE	60.06	46.62	38.23	35.07
MK2-1	1/4W 1% MF RES 50ppm	10Ω to 976K	TAPE	50.05	38.85	31.86	29.23
MK2-2	1/4W 1% MF RES 50ppm	1m to 3.92m	TAPE	85.86	66.60	54.61	50.10
MK2-3	1/4W 1% MF RES 50ppm	4.02m to 10m	TAPE	200.02	155.40	127.41	116.90
*MK2-25PPM-1	1/4W 1% MF RES 25ppm	10Ω to 449K	TAPE	174.46	135.42	111.03	101.87
*MK2-25PPM-2	1/4W 1% MF RES 25ppm	511K to 1m	TAPE	197.34	153.18	125.59	115.23
*MK2-15PPM (.1%)	1/4W .1% MF RES 15ppm	100Ω to 100K	TAPE	686.40	532.79	436.83	400.79
PM-25	1/4W 1% MF RES 100ppm	10Ω to 1m	TAPE	20.67	16.05	13.16	12.07
MK3-0	1/2W 1% MF RES 50ppm	1Ω to 9.76Ω	TAPE	100.10	77.70	63.71	58.45
MK3-1	1/2W 1% MF RES 50ppm	10Ω to 976K	TAPE	85.60	66.60	54.61	50.10
*MK3-2	1/2W 1% MF RES 50ppm	1m to 3.92m	TAPE	122.98	95.46	78.27	71.81
*MK3-3	1/2W 1% MF RES 50ppm	4.02m to 10m	TAPE	237.38	184.26	151.07	138.61
	(TAPE MINIMUM - - 25 pcs. per value)						
CARBON COMPOSITION RC07(JAPAN)							
RC07J-1	1/4W 5% CC RES	2.2Ω to 6.2m	100/bulk	51.25	39.36	32.19	30.75
RC07J-2	1/4W 5% CC RES	6.8m to 10m	100/bulk	97.50	74.88	61.23	58.50

100 minimum per value of same wattage may be combined for next column price.
*Delivery quoted at time order is placed.
For larger quantity and program pricing - contact TAW

TAW ELECTRONICS, INC. 4215 W. BURBANK BLVD. BURBANK, CA 91505

L.A. (818) 846-3911
NO. CA. (408) 738-1795
OUT CA. (800) 255-9538

TELEX: 71-3718354
TWX : 310-3718354

F.O.B. BURBANK, CA
PRICES SUBJECT TO CHANGE
TERMS NET 30 DAYS

METAL FILM

MK

GENERAL INFORMATION

Construction

Metal film resistors with heavily tinned, easily solderable wire leads. Welded end caps, multi-lacquered body. Color blue.

Military equivalent

MIL-R-10509	RN60	RN 65

MIL-R-10509 char. C, E and F
MIL-R-55182
MIL-R-22684
IEC 115 type I

STANDARD VALUES AND TOLERANCES

Type	MK 2	MK 3
	1/4W	1/2 W
Range	1 ohm to 10M	
Tolerance	±1%,	

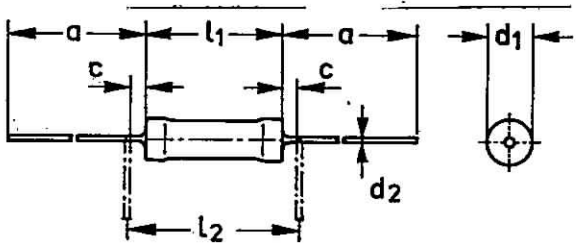
*All types available with ±50 • 25 • 15ppm

PERFORMANCE CHARACTERISTICS

Specification	Symbol	MK 2	MK 3
Power rating			
@ 40°C		0.5	0.6
@ 70°C	W	0.4	0.5
@ 125°C		0.18	0.25
Max. operating voltage	V	250	300
Breakdown voltage	Veff	>500	>500
Insulation resistance	MΩ	$>10^7$	$>10^7$
Self-capacitance	pF	<0.2	<0.3
Voltage coefficient	1/V	$<10^{-7}$	$<10^{-7}$
Noise	uV/V	See Curves	
Harmonic ratio	dB	See Curves	
Thermal resistance	°C/W	220	180
Thermal time constant	sec.	10	25
Failure rate		$<1X10^{-8}$	$<1X10^{-8}$
Long-term Exposure per IEC, 56 days, 40°C, 90 – 95% relative humidity	$\frac{\Delta R}{R}$	<.5%	<.5%

MANUFACTURED BY RESISTA, W. GERMANY

Dimension inches	MK 2	MK 3
d_1	.098 - .004	.126 - .008
l_1	.236 - .028	.335 - .039
a	1.339±.039	1.417±.039
c*	⩽.079	⩽.079
d_2	.024	.024
l_2 min.	.295	.492



COLOR CODE BANDS

Ohms:		
	Black – 0	Green – 5
	Brown – 1	Blue – 6
	Red – 2	Violet – 7
	Orange – 3	Grey – 8
	Yellow – 4	White – 9

Tolerances:		
	Brown – ±1%	Green – ±0.5%
	Red – ±2%	Blue – ±0.25%
	Gold – ±5%	Violet – ±0.1%
	Silver – ±10%	Grey – ±0.05%
	Without – ±20%	

DATE 6/1/83

Graphs next page

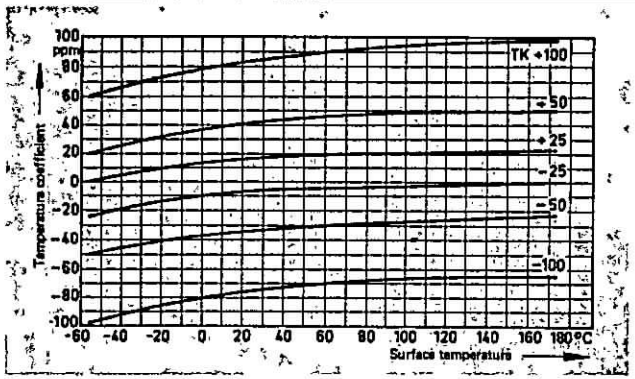
STOCKING DISTRIBUTOR

TAW ELECTRONICS, INC.
4215 WEST BURBANK BLVD. • BURBANK, CA 91505

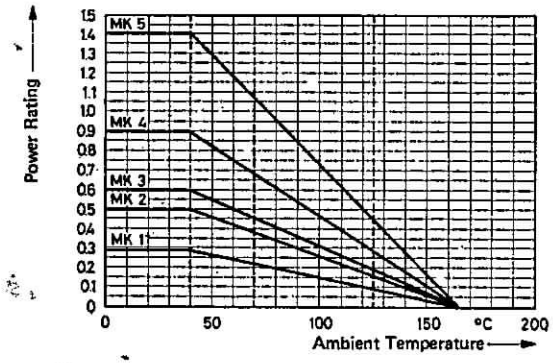
818•846-3911 LOS ANGELES
408•738-1795 NORTHERN CALIFORNIA
1•800•255-9538 OUTSIDE CALIFORNIA
TELEX: 71-3718354 • TWX: 310-3718354

TYPICAL PERFORMANCE CURVES

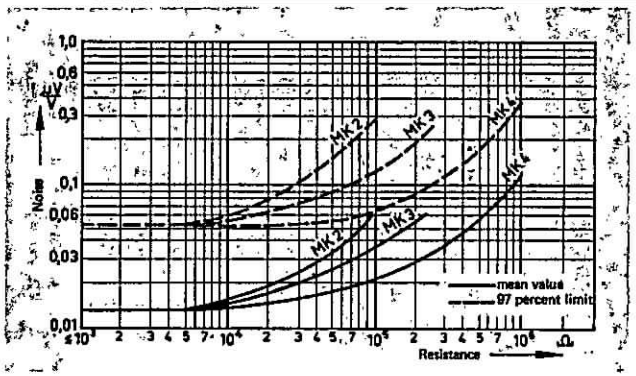
TEMPERATURE COEFFICIENT
PPM = f(T)



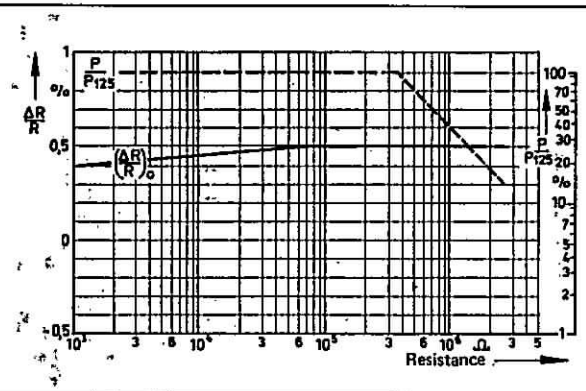
DERATING



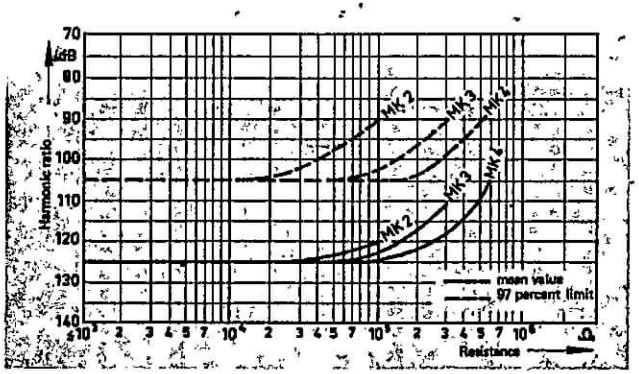
NOISE



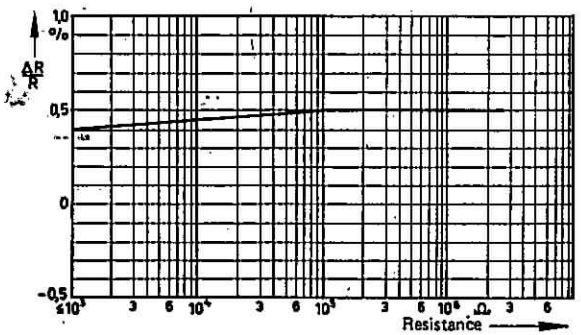
LIFE TEST
according to IEC 1000 h, P_{125}



HARMONIC RATIO



STORAGE
at 170°C, 1000 h

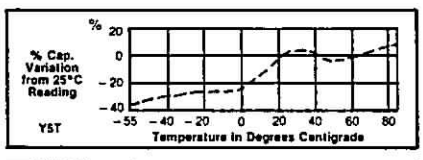


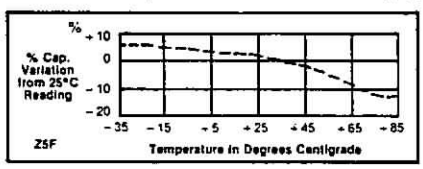
Ceramic Disc Capacitors

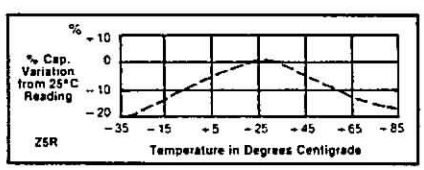
CAP MFD	TOL.	TYPE	E.I.A. T.C.	MAX DIA.	MAX THK	LEAD SPACING	LEAD DIA.
				INCHES			
TYPE TCO 12 VDCW							
.1	+80%-20%	TCO104Z	Y5T	.354	156	.250	.025
.1	+80%-20%	TCO104Z	Y5S	.315	.156	.250	.025
22	+80%-20%	TCO224Z	Y5T	.512	.156	.250	.025
.47	+80%-20%	TCO474Z	Y5T	.610	.156	.375	.025
TYPE TCL 16 VDCW							
.01	±20%	TCL103M	Z5R	.250	187	.250	.025
022	±20%	TCL223M	Z5R	.300	.187	.250	.025
033	±20%	TCL333M	Z5R	.340	.187	.250	.025
.05	±20%	TCL503M	Z5R	.330	.187	.250	.025
.1	±20%	TCL104M	Z5R	.380	.156	.375	.025
.22	±20%	TCL224M	Z5R	.555	.187	.375	.025
33	±20%	TCL334M	Z5R	.625	187	.375	.025
47	±80-20%	TCL474Z	Z5R	.625	.187	.375	.025
TYPE TCA 25 VDCW							
.002	+80-20%	TCA223Z	Z5V	156	156	.250	.025
.033	+80-20%	TCA333Z	Z5V	.315	.156	.250	.025
.05	+80-20%	TCA503Z	Z5V	.315	156	.250	.025
.068	+80-20%	TCA683Z	Z5V	.450	156	.375	.025
.1	+80-20%	TCA104Z	Z5V	.450	156	.375	.025
TYPE TCD 50 VDCW +80% - 20%							
.005	+80-20%	TCD502Z	Z5V	.250	.156	.250	.025
.010	+80-20%	TCD103Z	Z5V	.250	156	.250	.025
.020	+80-20%	TCD203ZS	Z5V	.325	156	.250	.025
.020	+80-20%	TCD203Z	Z5V	.315	.156	.375	.025
.025	+80-20%	TCD253Z	Z5V	.400	.156	.375	.025
.030	+80-20%	TCD303Z	Z5V	.400	.156	.375	.025
.050	+80-20%	TCD503Z	Z5V	.400	.156	.375	.025
.068	+80-20%	TCD683Z	Z5V	.515	156	.375	.025
1	+80-20%		Z5V	.515	.156	.375	.025
TYPE TCD 50 VDCW ±20%							
.01	±20%	TCD103M	Z5U	.315	.156	.250	.025
.015	±20%	TCD153M	Z5U	.394	.156	.250	.025
.022	±20%	TCD223M	Z5U	.394	.156	.250	.025
.033	±20%	TCD333M	Z5U	.515	.156	.375	.025
.047	±20%	TCD473M	Z5U	.625	.156	.375	.025
.050	±20%	TCD503M	Z5U	.625	.156	.375	.025
TYPE TCP 100 VDCW							
.005	±20%	TCP-R005	Z5U	.390	.156	.250	.025
.01	±20%	TCP-R01	Z5U	.390	.156	.250	.025
.02	±20%	TCP-R02	Z5U	.440	.156	.250	.025
.025	±20%	TCP-R025	Z5R	.440	.156	.250	.025
.03	±20%	TCP-R03	Z5U	.590	.156	.375	.025
.05	±20%	TCP-R05	Z5U	.625	.156	.375	.025
.1	+80%-20%	TCP-R1	Z5U	.725	.156	.375	.025

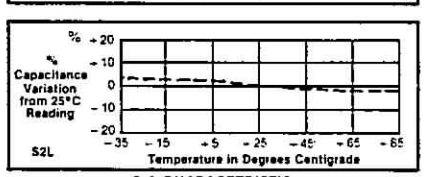
SPECIFICATIONS:
TEMPERATURE CHARACTERISTICS: See Table 1
OPERATING TEMPERATURE: See Table 1
TEST VOLTAGE: For 12 through 100 VDC - 250% of rated voltage.
For 1000VDC - 200% of rated voltage.
INSULATION RESISTANCE: 75,000 Megohms min. @ Working Voltage
Q (Ratio of Reactance to Equivalent Series Resistance)
Capacitance ≤ 30pf Q ≥ 400 + 20xCpf
Capacitance > 30pf Q ≥ 1000
CAPACITANCE VS. TEMPERATURE CHARACTERISTICS: See performance curves.
DISSIPATION FACTOR:
For Z5F, Z5R, Z5U 2.5% Max. @ 1 KC and 25°C
Z5V 5.0% Max. @ 1 KC and 25°C
S2L, S3N 0.6% Max. @ 1 MC and 25°C

PERFORMANCE CURVES

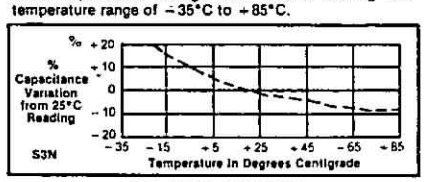




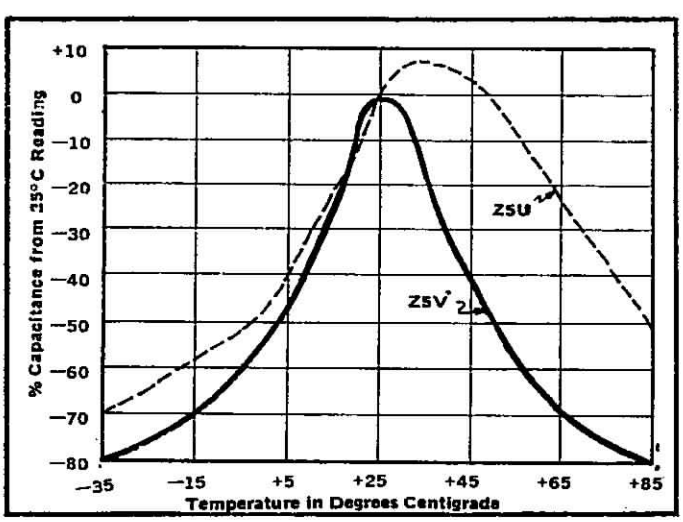




S2L CHARACTERISTIC:
N330 ±500 parts-per-million per-degree C (PPM/°C) maximum capacitance change from +25°C reading over temperature range of −35°C to +85°C.



S3N CHARACTERISTICS:
N3300 ±2500 parts-per-million per-degree C (PPM/°C) maximum capacitance change from +25°C reading over temperature range of −35°C to +85°C.



TYPE CCD 1000VDW

Capac. pf	Tol	Char.	Part No.	Dia.	Lead Spacing	Thk.	Lead Dia.
				Inches			
3.3	± .5 pf	S2L	CCD-3R3	.290	.250	.156	.025
5	± 10%	S2L	CCD-050	.290	.250	.156	.025
*6	± 10%	S2L	CCD-060	.290	.250	.156	.025
6.8	± 10%	S2L	CCD-6R8	.290	.250	.156	.025
7.5	± 10%	S2L	CCD-7R5	.290	.250	.156	.025
*8	± 10%	S2L	CCD-080	.290	.250	.156	.025
10	± 10%	S2L	CCD-100	.290	.250	.156	.025
12	± 10%	S2L	CCD-120	.290	.250	.156	.025
15	± 10%	S2L	CCD-150	.290	.250	.156	.025
18	± 10%	S2L	CCD-180	.290	.250	.156	.025
20	± 10%	S2L	CCD-200	.290	.250	.156	.025
22	± 10%	S2L	CCD-220	.290	.250	.156	.025
*24	± 10%	S2L	CCD-240	.290	.250	.156	.025
25	± 10%	S2L	CCD-250	.290	.250	.156	.025
27	± 10%	S2L	CCD-270	.290	.250	.156	.025
30	± 10%	S3N	CCD-300	.290	.250	.156	.025
33	± 10%	S3N	CCD-330	.290	.250	.156	.025
33	± 10%	N1500	CCD-330M	.280	.250	.156	.025
39	± 10%	S3N	CCD-390	.290	.250	.156	.025
47	± 10%	S3N	CCD-470	.290	.250	.156	.025
50	± 10%	S3N	CCD-500	.290	.250	.156	.025
*51	± 10%	S3N	CCD-510	.290	.250	.156	.025
56	± 10%	S3N	CCD-560	.290	.250	.156	.025
68	± 10%	S3N	CCD-680	.290	.250	.156	.025
75	± 10%	S3N	CCD-750	.290	.250	.156	.025
82	± 10%	S3N	CCD-820	.290	.250	.156	.025
91	± 10%	S3N	CCD-910	.290	.250	.156	.025
100	± 10%	S3N	CCD-101	.290	.250	.156	.025
120	± 10%	S3N	CCD-121	.290	.250	.156	.025
130	± 10%	S3N	CCD-131	.290	.250	.156	.025
150	± 10%	S3N	CCD-151	.290	.250	.156	.025
180	± 10%	S3N	CCD-181	.290	.250	.156	.025
200	± 10%	S3N	CCD-201	.290	.250	.156	.025
220	± 10%	Z5F	CCD-221	.290	.250	.156	.025
240	± 10%	Z5F	CCD-241	.290	.250	.156	.025
250	± 10%	Z5F	CCD-251	.290	.250	.156	.025
270	± 10%	Z5F	CCD-271	.290	.250	.156	.025
300	± 10%	Z5F	CCD-301	.290	.250	.156	.025
330	± 10%	Z5F	CCD-331	.290	.250	.156	.025
350	± 10%	Z5F	CCD-351	.290	.250	.156	.025
*360	± 10%	Z5F	CCD-361	.290	.250	.156	.025
390	± 10%	Z5F	CCD-391	.290	.250	.156	.025
400	± 10%	Z5F	CCD-401	.290	.250	.156	.025
470	± 10%	Z5F	CCD-471	.290	.250	.156	.025
500	± 10%	Z5R	CCD-501	.290	.250	.156	.025
*510	± 10%	Z5R	CCD-511	.290	.250	.156	.025
560	± 10%	Z5R	CCD-561	.290	.250	.156	.025
*600	± 10%	Z5R	CCD-601	.290	.250	.156	.025
680	± 10%	Z5R	CCD-681	.290	.250	.156	.025
750	± 10%	Z5R	CCD-751	.290	.250	.156	.025
800	GMV	Z5U	CCD-801G	.290	.250	.156	.025
820	± 20%	Z5U	CCD-821	.290	.250	.156	.025
*910	± 20%	Z5U	CCD-911	.290	.250	.156	.025
1000	± 10%	Z5R	CCD-102	.385	.250	.156	.025
*1000	GMV	Z5U	CCD-102G	.290	.250	.156	.025
1200	±10%	Z5R	CCD-122	.385	.250	.156	.025
*1300	± 10%	Z5R	CCD-132	.385	.250	.156	.025
1500	± 20%	Z5U	CCD-152	.385	.250	.156	.025
*1500	GMV	Z5U	CCD-152G	.290	.250	.156	.025
*1600	± 20%	Z5U	CCD-162	.385	.250	.156	.025
*1800	± 20%	Z5U	CCD-182	.385	.250	.156	.025
2000	GMV	Z5U	CCD-202G	.385	.250	.156	.025
2200	GMV	Z5U	CCD-222G	.385	.250	.156	.025
2500	GMV	Z5U	CCD-252G	.385	.250	.156	.025
2700	GMV	Z5U	CCD-272G	.385	.250	.156	.025
3000	GMV	Z5U	CCD-302G	.385	.250	.156	.025
3300	GMV	Z5U	CCD-332G	.590	.375	.156	.025
3900	GMV	Z5U	CCD-392G	.590	.375	.156	.025
4000	GMV	Z5U	CCD-402G	.590	.375	.156	.025
4300	GMV	Z5U	CCD-432G	.590	.375	.156	.025
4700	± 20%	Z5U	CCD-472	.590	.375	.156	.025
5000	± 20%	Z5U	CCD-502	.590	.375	.156	.025
5600	GMV	Z5U	CCD-562G	.590	.375	.156	.025
6800	GMV	Z5U	CCD-682G	.590	.375	.156	.025
*7500	GMV	Z5U	CCD-752G	.590	.375	.156	.025
8200	GMV	Z5U	CCD-822G	.690	.375	.156	.025
10000	± 20%	Z5U	CCD-103	.690	.375	.156	.025
*10000	GMV	Z5U	CCD-103G†	.590	.375	.156	.025
15000	+80-20%	Z5U	CCD-153†	.690	.375	.156	.025
20000	+80-20%	Z5U	CCD-203†	.690	.375	.156	.025
30000	+80-20%	Z5U	CCD-303†	.900	.375	.156	.025
50000	+80-20%	Z5U	CCD-503†	.875	.375	.250	.025

† Indicates 600-VDCW
GMV Indicates Guaranteed Minimum Value.

DATE: 1-1-84

Table 1
Temperature Characteristics

Symbol	Z5	Y5	X5
Temp. Range For Characteristic Determination (°C)	+10 Thru +85	−30 Thru +85	−55 Thru +85

Symbol	E	F	P	R	T	U	V
Max. Cap. Change (%) Over Temp. Range	± 4.7	+7.5	± 10	+15	+22 −33	+22 −56	+22 −82

STOCKING DISTRIBUTOR

TAW ELECTRONICS, INC.
4215 WEST BURBANK BLVD. • BURBANK, CA 91505
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408•738-1795 NORTHERN CALIFORNIA
1•800•255-9538 OUTSIDE CALIFORNIA
TELEX: 71-3718354 • TWX: 310-3718354

PRICE SCHEDULE

2-1-85

D I S C C A P

Price Per Each

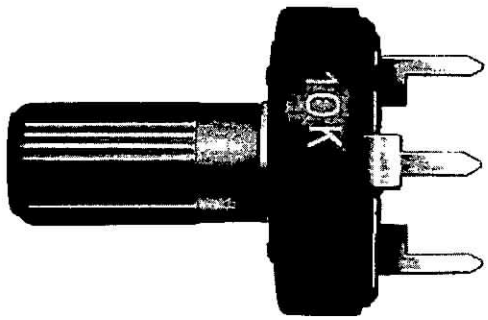
Cap.	Tol.	Volts	Dia.	L/S	1-99	100	500	1M
3.3 pf-910		1000	.290	.250	.089	.069	.057	.052
1000 pf	10%	1000	.385	.250	.097	.076	.062	.057
1000 pf	GMV	1000	.290	.250	.097	.076	.062	.057
1200	10%	1000	.385	.250	.097	.076	.062	.057
1300	10%	1000	.385	.250	.112	.087	.071	.065
1500	10%	1000	.385	.250	.112	.087	.071	.065
1500	GMV	1000	.290	.250	.112	.087	.071	.065
1600	20%	1000	.385	.250	.112	.087	.071	.065
1800	20%	1000	.385	.250	.112	.087	.071	.065
2000	20%	1000	.385	.250	.112	.087	.071	.065
2000	GMV	1000	.385	.250	.112	.087	.071	.065
2200	GMV	1000	.385	.250	.112	.087	.071	.065
2500	GMV	1000	.385	.250	.118	.091	.075	.069
2700	GMV	1000	.385	.250	.118	.091	.075	.069
3000	GMV	1000	.385	.250	.123	.096	.079	.072
3300	GMV	1000	.590	.375	.118	.091	.075	.069
3900	GMV	1000	.590	.375	.118	.091	.075	.069
4000	GMV	1000	.590	.375	.118	.091	.075	.069
4300	GMV	1000	.590	.375	.118	.091	.075	.069
4700	20%	1000	.590	.375	.118	.091	.075	.069
5000	20%	1000	.590	.375	.118	.091	.075	.069
5600	GMV	1000	.590	.375	.118	.091	.075	.069
6800	GMV	1000	.590	.375	.118	.091	.075	.069
7500	GMV	1000	.590	.375	.172	.133	.109	.100
8200	GMV	1000	.690	.375	.172	.133	.109	.100
10,000	20%	1000	.690	.375	.183	.142	.117	.107
10,000	GMV	1000	.590	.375	.183	.142	.117	.107
15,000	+80-20	600	.690	.375	.206	.160	.131	.120
20,000	+80-20	600	.750	.375	.343	.267	.219	.201
30,000	+80-20	600	.875	.375	.455	.353	.290	.266
50,000	+80-20	600	.875	.375	.489	.380	.311	.286
500 VOLT								
.1	+80-20	CCD-104Z	.551	.354	.775	.602	.493	.453
.1	20%	CCD-104M	.906	.354	1.107	.859	.705	.647
12 VOLT								
.1	+80-20	Y5S-104Z	.315	.250	.178	.138	.113	.104
.1	+80-20	TCO-104Z	.354	.250	.115	.089	.073	.067
.22	+80-20	TCO-224Z	.512	.250	.223	.173	.142	.131
.47	+80-20	TCO-474Z	.610	.375	.495	.385	.315	.289
16 VOLT								
.01	20%	TCL-103M	.250	.250	.112	.087	.071	.065
.022	20%	TCL-223M	.300	.250	.115	.089	.073	.067
.033	20%	TCL-333M	.340	.250	.123	.096	.079	.072
.05	20%	TCL-503M	.330	.250	.169	.131	.108	.099

Cap.	Tol.		Dia.	L/S	1-99	100	500	1 M
16 VOLT - continued								
.1	20%	TCL-104M	.380	.375	.135	.105	.086	.079
.22	20%	TCL-224M	.555	.375	.223	.173	.142	.131
.33	20%	TCL-334M	.625	.375	.521	.404	.331	.304
.47	+80-20	TCL-474Z	.625	.375	.498	.387	.317	.291
25 VOLT								
.022	+80-20	TCA-223Z	.315	.250	.083	.065	.052	.049
.033	+80-20	TCA-333Z	.315	.250	.106	.082	.068	.062
.05	+80-20	TCA-503Z	.315	.250	.112	.087	.071	.065
.068	+80-20	TCA-6832	.450	.375	.146	.113	.093	.085
.1	+80-20	TCA-104Z	.515	.375	.175	.136	.111	.102
50 VOLT								
.005	+80-20	TCD-502Z	.250	.250	.046	.036	.029	.027
.01	+80-20	TCD-103Z	.250	.250	.049	.038	.031	.029
.02	+80-20	TCD-203Z	.325	.250	.055	.042	.035	.032
.025	+80-20	TCD-253Z	.400	.375	.069	.054	.044	.040
.03	+80-20	TCD-303Z	.400	.375	.080	.062	.051	.047
.05	+80-20	TCD-503Z	.400	.375	.095	.074	.060	.055
.068	+80-20	TCD-683Z	.515	.375	.129	.100	.082	.075
.1	+80-20	TCD-104Z	.515	.375	.183	.142	.117	.107
50 VOLT - 20%								
.01	20%	TCD-103M	.315	.250	.060	.047	.038	.035
.015	20%	TCD-153M	.394	.250	.069	.054	.044	.040
.022	20%	TCD-223M	.394	.250	.095	.074	.060	.055
.033	20%	TCD-333M	.515	.375	.106	.082	.068	.062
.047	20%	TCD-473M	.625	.375	.140	.105	.089	.082
.05	20%	TCD-503M	.625	.375	.140	.109	.089	.082
100 VOLT								
.005 pf	20%	TCP-R005	.390	.250	.097	.076	.062	.057
.01	20%	TCP-R01	.390	.250	.100	.078	.064	.059
.02	20%	TCP-R02	.440	.250	.118	.091	.075	.069
.025	20%	TCP-R025	.440	.250	.135	.105	.086	.079
.03	20%	TCP-R03	.590	.375	.135	.105	.086	.079
.05	20%	TCP-R05	.625	.375	.146	.113	.093	.085
.1	+80-20	TCP-R1	.725	.375	.198	.153	.126	.115

T A W ELECTRONICS, INC. 4215 W. BURBANK BLVD. BURBANK, CALIFORNIA 91505

L.A. (818) 846-3911 TELEX : 71-3718354 F.O.B. BURBANK, CALIFORNIA
NO. CA. (408) 738-1795 TWX : 310-3718354 PRICES SUBJECT TO CHANGE WITHOUT NOTICE
OUT CA. (800) 255-9538 TERMS NET 30 DAYS

PIHER CERMET POTENTIOMETERS
SERIES PTC 10 / PTC 15



ELECTRICAL CHARACTERISTICS:	PTC 10	PTC 15
Nominal values range (Rn)	100 220 470 1K 2.2K 4.7K 10K 22K 47K 100K 220K 470K 1M ≥50Ω to <100Ω and >1MΩ to ≤5MΩ upon request	
Tolerance	±20% (± 10% upon request)	
Power rating	.33W at 70°C .50W at 40°C	.50W at 70°C .75W at 40°C
Voltage rating	200 VDC	250 VDC
Residual resistance	≤2Ω for Rn ≤2.2K .1% for Rn >2.2K	
Variation in apparent wiper resistance	2.5%	
Temperature coefficient	−100 ppm	
Temperature range	−55° to 125°C	
Electrical life test 1000 hours at 70 C	ΔR≤2%	

MECHANICAL CHARACTERISTICS:		
Angle of rotation (mechanical) (electrical)	240° ± 5° 220° ± 15°	270° ± 5° 250° ± 15°
Wiper torque	.5 to 1.5 Ncm (.7 to 2.1 oz in)	.5 to 2.5 Ncm (.7 to 3.4 oz in)
Maximum applicable torque at the end stops	5 Ncm (6.8 oz in)	20 Ncm 27.2 oz in)
Thrust and pull in the spindle	9.8 N (35 oz)	25 N (90 oz)
Mechanical life	200 cycles ΔR<1%	

TAW ELECTRONICS, INC. •
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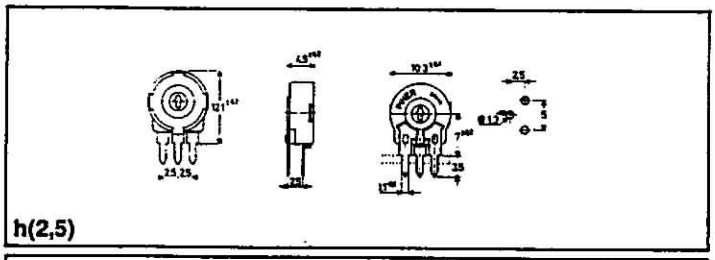
(408) 738-1795 Sunnyvale
(800) 255-9538 Outside of California
Telex 71-3718354 TWX 310-3718354

PTC 10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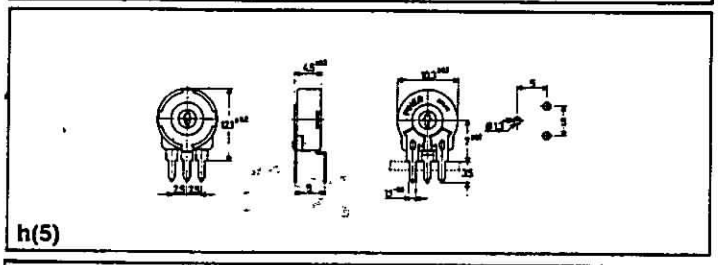
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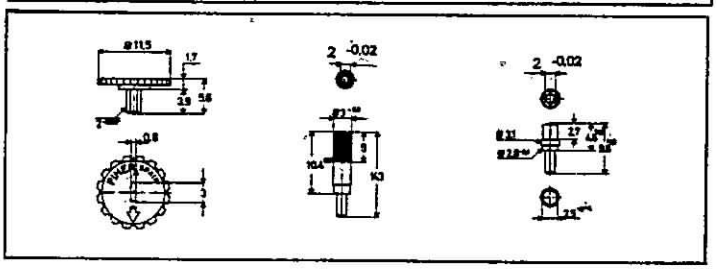

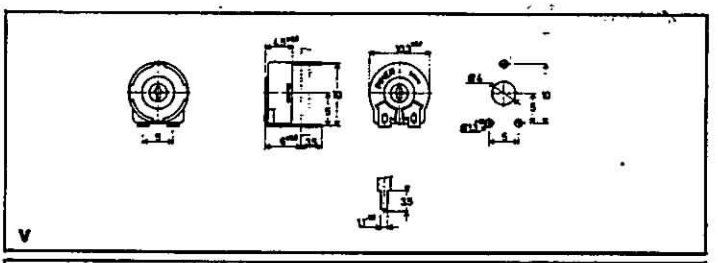
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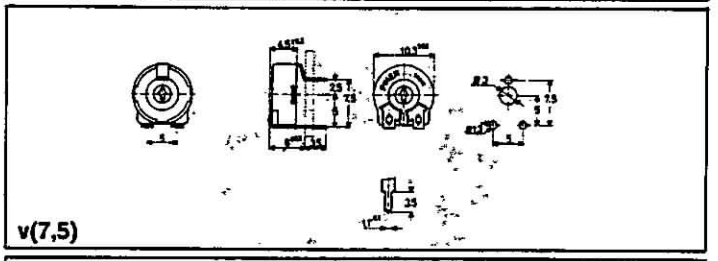
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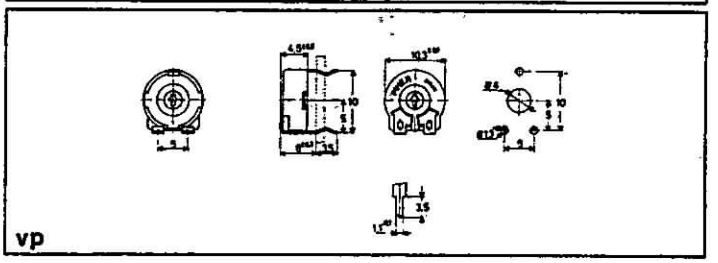
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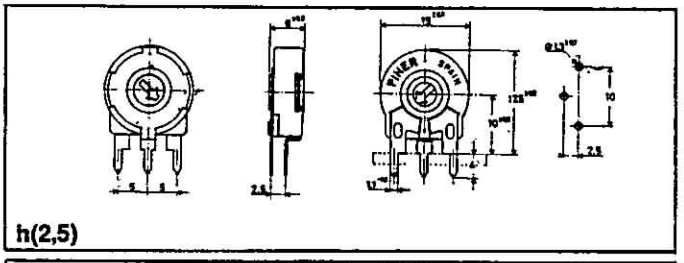
PTC 15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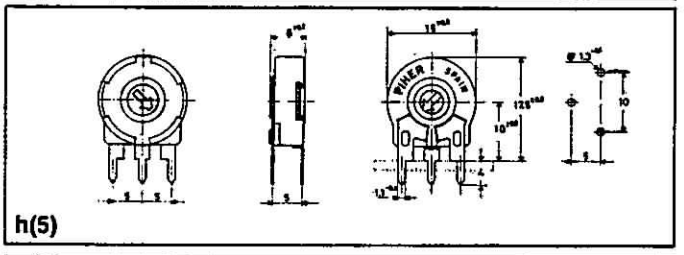
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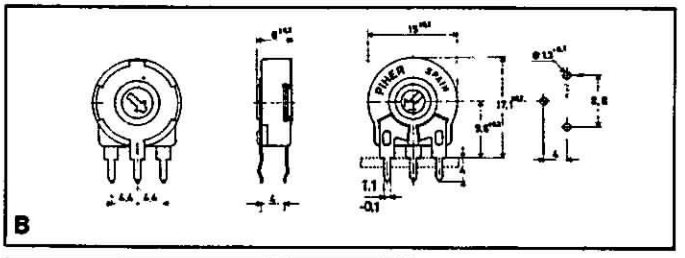
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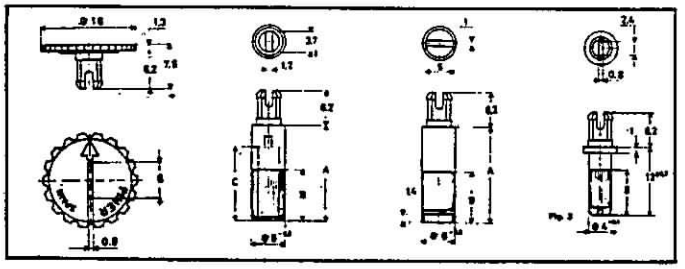

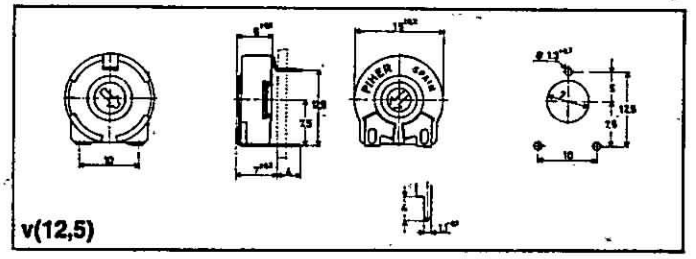
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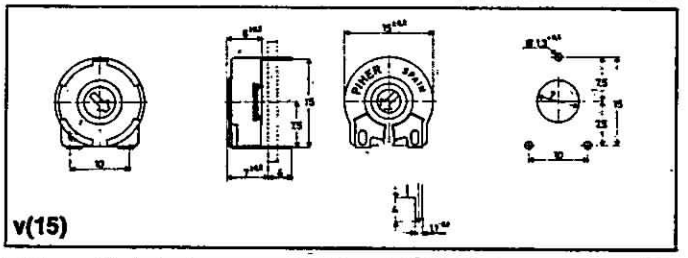
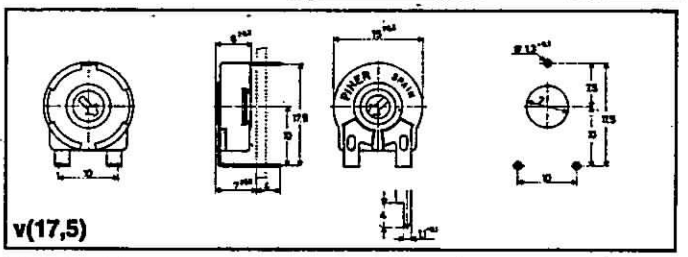

v(15)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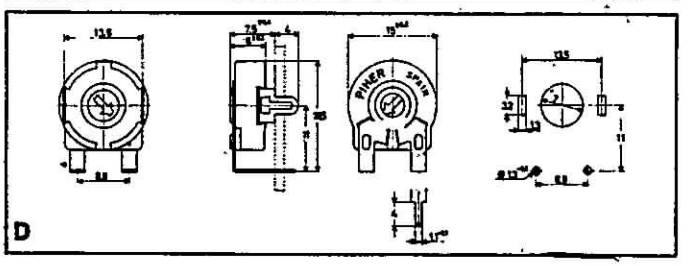
D

PIHER TRIMMER POTENTIOMETERS

DESCRIPTION	BASE PRICE	100	500	1000	5000	10000
PT 10 H						
PIHER PT10 H (2.5)	303.39	235.50	212.17	177.15	171.85	166.57
ITEM CODE: PT 10H 100H, PT 10H 200H, PT 10H 250H, PT 10H 300H, PT 10H 500H	PT 10H 1K, PT 10H 2K, PT 10H 2K5, PT 10H 5K, PT 10H 10K	PT 10H 20K, PT 10H 25K, PT 10H 30K, PT 10H 50K, PT 10H 100K	PT 10H 120K, PT 10H 200K, PT 10H 220K, PT 10H 250K, PT 10H 300K	PT 10H 500K, PT 10H 1M, PT 10H 1M5, PT 10H 2M, PT 10H 3M	PT 10H 5M, PT 10H 10M	
PT 10 V						
PIHER PT10 V	303.39	235.50	212.17	177.15	171.85	166.57
ITEM CODE: PT 10V 100H, PT 10V 200H, PT 10V 250H, PT 10V 300H, PT 10V 500H	PT 10V 1K, PT 10V 2K, PT 10V 2K5, PT 10V 5K, PT 10V 10K	PT 10V 20K, PT 10V 25K, PT 10V 30K, PT 10V 50K, PT 10V 100K	PT 10V 120K, PT 10V 200K, PT 10V 250K, PT 10V 300K, PT 10V 500K	PT 10V 1M, PT 10V 1M5, PT 10V 2M, PT 10V 3M, PT 10V 5M	PT 10V 10M	
PT 10 YV						
* PIHER PT10 YV	327.18	253.96	228.80	191.05	185.32	179.63
ITEM CODE: PT 10 YV 100H, PT 10 YV 250H, PT 10 YV 500H, PT 10 YV 1K	PT 10 YV 2K, PT 10 YV 2K5, PT 10 YV 5K, PT 10 YV 10K	PT 10 YV 20K, PT 10 YV 25K, PT 10 YV 30K, PT 10 YV 50K	PT 10 YV 100K, PT 10 YV 120K, PT 10 YV 200K, PT 10 YV 250K	PT 10 YV 300K, PT 10 YV 500K, PT 10 YV 1M, PT 10 YV 2M	PT 10 YV 5M, PT 10 YV 10M	
PT 15 YB						
* PIHER PT15 YB	333.13	258.58	232.96	194.52	188.69	182.89
ITEM CODE: PT 15YB 100H, PT 15YB 200H, PT 15YB 250H, PT 15YB 300H, PT 15YB 500H	PT 15YB 1K, PT 15YB 2K, PT 15YB 2K5, PT 15YB 5K	PT 15YB 10K, PT 15YB 20K, PT 15YB 25K, PT 15YB 30K	PT 15YB 50K, PT 15YB 100K, PT 15YB 120K, PT 15YB 200K	PT 15YB 250K, PT 15YB 300K, PT 15YB 500K, PT 15YB 1M	PT 15YB 1M5, PT 15YB 2M, PT 15YB 5M, PT 15YB 10M	
PT 15 YD						
* PIHER PT15 YD	333.13	258.58	232.96	194.52	188.69	182.89
ITEM CODE: PT 15YD 100H, PT 15YD 200H, PT 15YD 250H, PT 15YD 300H, PT 15YD 500H	PT 15YD 1K, PT 15YD 2K, PT 15YD 2K5, PT 15YD 5K, PT 15YD 10K	PT 15YD 20K, PT 15YD 25K, PT 15YD 30K, PT 15YD 50K	PT 15YD 100K, PT 15YD 120K, PT 15YD 200K, PT 15YD 250K	PT 15YD 300K, PT 15YD 500K, PT 15YD 1M, PT 15YD 1M5	PT 15YD 2M, PT 15YD 3M, PT 15YD 5M, PT 15YD 10M	
PTC 10 V CERMET						
PIHER CERMET PTC 10V	383.70	297.83	244.19	232.11	224.05	203.94
ITEM CODE: PTC 10V 100H, PTC 10V 220H, PTC 10V 470H	PTC 10V 1K, PTC 10V 2K, PTC 10V 2.2K	PTC 10V 4.7K, PTC 10V 5K, PTC 10V 10K	PTC 10V 22K, PTC 10V 47K, PTC 10V 50K	PTC 10V 100K, PTC 10V 220K	PTC 10V 470K, PTC 10V 1M	
PTC 10 H CERMET						
PIHER CERMET PTC 10H	383.70	297.83	244.19	232.11	224.05	203.94
ITEM CODE: PTC 10H 100H, PTC 10H 220H, PTC 10H 470H	PTC 10H 1K, PTC 10H 2K, PTC 10H 2.2K	PTC 10H 4.7K, PTC 10H 5K, PTC 10H 10K	PTC 10H 22K, PTC 10H 47K, PTC 10H 50K	PTC 10H 100K, PTC 10H 220K	PTC 10H 470K, PTC 10H 1M	
THUMBWHEELS	89.00	69.09	56.64	53.84	51.97	47.31
SPINDLE SHAFTS	100.00	77.62	63.64	60.49	58.39	53.15

*WITH THUMBWHEELS

T A W ELECTRONICS, INC. 4215 W. BURBANK BLVD. BURBANK, CALIFORNIA 91505

L.A. [213] 848-3911 TELEX : 71-3718354 F.O.B. BURBANK, CALIFORNIA
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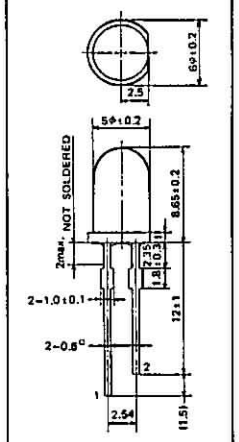
Panasonic

POINT LIGHT SOURCE ROUND TYPE (5ø SERIES)

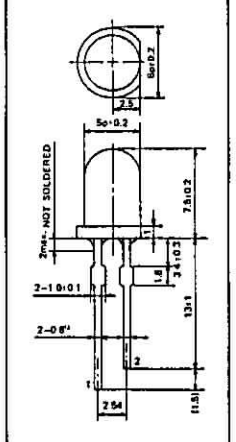
Package	Type No.	Radiation Color & Meterial	Lens Dimension	Absolute Maximum Ratings (Ta=25°C)					Electro-Optical Characteristics (Ta=25°C)					
				V_R (V)	I_F (mA)	I_{FM} (mA)	P_D (mW)	Topr (°C)	at I_F (mA)	I_O typ. (mcd)	at I_F (mA)	V_F typ. (V)	I_R max. (μA)	λ_P typ. (Å)
K-1	LN21RP,HL	Red GaP	Red Diffused	4	25	30	70	−25 ~ +85	15	2.0	20	2.1	5	7,000
K-1	LN21RCP,HL	Red GaP	Red Clear	4	25	30	70	−25 ~ +85	15	5.0	20	2.1	5	7,000
K-1	LN21WP,HL	Red GaP	White Diffused	4	25	30	70	−25 ~ +85	15	3.0	20	2.1	5	7,000
K-1	LN21CP,HL	Red GaP	Clear	4	25	30	70	−25 ~ +85	15	5.0	20	2.1	5	7,000
K-1	LN31GP,HL	Green GaP	Green Diffused	4	30	40	90	−25 ~ +85	20	15.0	20	2.2	5	5,650
K-1	LN31GCP,HL	Green GaP	Green Clear	4	30	40	90	−25 ~ +85	20	20.0	20	2.2	5	5,650
K-1	LN41YP,HL	Amber GaAsP	Amber Diffused	4	30	40	90	−25 ~ +85	20	8.0	20	2.1	10	5,900
K-1	LN41YCP,HL	Amber GaAsP	Amber Clear	4	30	40	90	−25 ~ +85	20	20.0	20	2.1	10	5,900
K-1	LN81RP,HL	Orange GaAsP	Red Diffused	3	30	40	90	−25 ~ +85	20	10.0	20	2.1	10	6,300
K-1	LN81RCP,HL	Orange GaAsP	Red Clear	3	30	40	90	−25 ~ +85	20	15.0	20	2.1	10	6,300
K-1	LN81CP,HL	Orange GaAsP	Clear	3	30	40	90	−25 ~ +85	20	20.0	20	2.1	10	6,300
K-2	LN21RP,SL	Red GaP	Red Diffused	4	25	30	70	−25 ~ +85	15	2.0	20	2.1	5	7,000
K-2	LN21RCP,SL	Red GaP	Red Clear	4	25	30	70	−25 ~ +85	15	5.0	20	2.1	5	7,000
K-2	LN21CP,SL	Red GaP	Clear	4	25	30	70	−25 ~ +85	15	5.0	20	2.1	5	7,000
K-2	LN31GP,SL	Green GaP	Green Diffused	4	30	40	90	−25 ~ +85	20	15.0	20	2.2	10	5,650
K-2	LN41YP,SL	Amber GaAsP	Amber Diffused	4	30	40	90	−25 ~ +85	20	8.0	20	2.1	10	5,900
Δ K-3	LN21RP,H	Red GaP	Red Diffused	4	25	30	70	−25 ~ +85	15	2.0	20	2.1	5	7,000
Δ K-3	LN21RCP,H	Red GaP	Red Clear	4	25	30	70	−25 ~ +85	15	5.0	20	2.1	5	7,000
Δ K-3	LN21WP,H	Red GaP	White Diffused	4	25	30	70	−25 ~ +85	15	3.0	20	2.1	5	7,000
Δ K-3	LN21CP,H	Red GaP	Clear	4	25	30	70	−25 ~ +85	15	5.0	20	2.1	5	7,000
Δ K-3	LN31GP,H	Green GaP	Green Diffused	4	30	40	90	−25 ~ +85	15	15.0	20	2.2	10	5,650
Δ K-3	LN31GCP,H	Green GaP	Green Clear	4	30	40	90	−25 ~ +85	15	20.0	20	2.2	10	5,650
Δ K-3	LN41YP,H	Amber GaAsP	Amber Diffused	4	30	40	90	−25 ~ +85	15	8.0	20	2.1	10	5,900
K-4	LN21	Red GaAsP	Red Diffused	3	65	80	130	−25 ~ +85	20	1.5	30	1.75	10	6,600
K-4	LN21W	Red GaAsP	White Diffused	3	65	80	130	−25 ~ +85	20	1.5	30	1.75	10	6,600
K-4	LN31	Green GaP	Green Diffused	4	30	40	90	−25 ~ +85	20	2.0	20	2.2	10	5,650

K-1



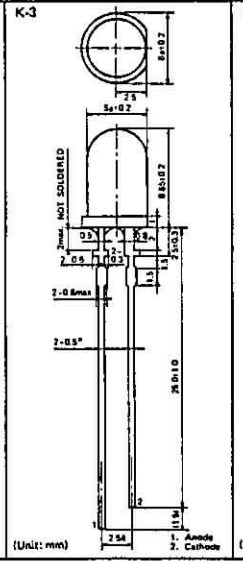
(Unit: mm) 1: Anode 2: Cathode

K-2



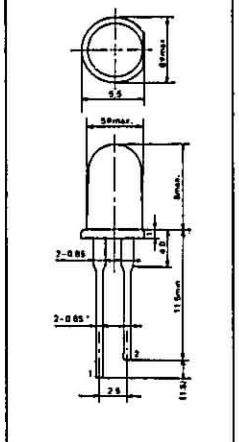
(Unit: mm) 1: Anode 2: Cathode

K-3



(Unit: mm) 1: Anode 2: Cathode

K-4



(Unit: mm) 1: Anode 2: Cathode

Δ Preliminary

NOTE

The visible-light emitting diode can be handled as same as other general use semiconductors, however following notes should be carefully taken by considering a opto-electric characteristics.

1. Temperature Resistance

- Temperature exeeding absolute maximum rating (Tstg) should not applied to the resin.
- Soldering works should be performed in 3 seconds under 260°C, 2 mm away from the resin.
- Soldering iron should be operated under 30W power consumptions.

2. Chemicals Resistance

Organic solvent like an acetone should not be used as it might cause a damage to the device. Washing should be performed in 30 seconds under 45°C using below chemicals.

[Point light source:
Alcohol, Chlorosen, Fleon TF, Haxan
Numerical Display/Level Meter:
Fleon TF, Hexan]

- Should be used under 25°C.

3. Abraison Resistance

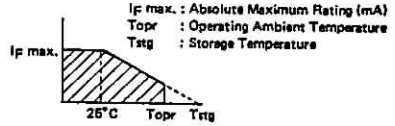
Some of the devices are made of resin with low-hardness characteristics, therefore they might be damaged when scratched by metal, nail and sand-blast.

4. Lead Wire Stresses

- Lead forming should be performed not to make any stresses to the device.
- When the device is mounted into printed circuit board, pitch spacing should be carefully aligned not to cause any stresses to the lead wires. Otherwise the stress will cause the trouble to the device in a high temperature operation. Three minutes are necessary for the device to return to normal temperature after the solder operation.

5. Operating Current at High Temperature

When ambient temperature exceeds 25°C, absolute maximum current decreases. Device should be operated in the oblique lined area.



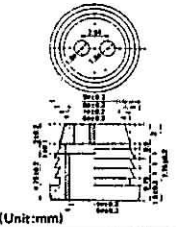
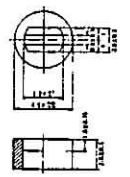
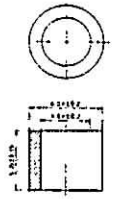
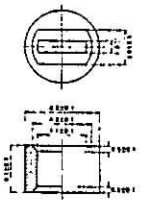
6. Filter

When the filter's transmittivity is not matched with lighting color, luminous intensity decreases remarkably. Same colored filter should be used.

7. Excess Current

Protection resistor should be applied to protect against excess current.

MOUNTING ACCESSORY (LED HOLDER, LED SPACER)

Type No.	LED Holder	LED Spacer		
	KL-01	KL-02	KL-03	KL-04
Materials	Chloroprene Rubber	Epoxy resin	Epoxy resin	Epoxy resin
LED Package No.	5ø Type (K-1, K-2 K-3, K-4)	3ø Type (K-5, K-7 K-8, K-8)	5ø Type (K-1, K-2 K-3, K-4)	4ø, 5ø Type (K-1, K-2 K-3, K-4 K-9, K-10)
Out Line Drawings	 (Unit:mm)	 (Unit:mm)	 (Unit:mm)	 (Unit:mm)

STOCKING DISTRIBUTOR

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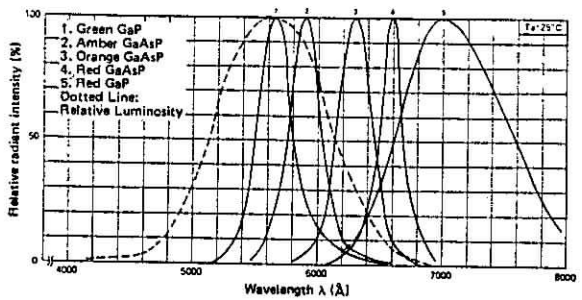
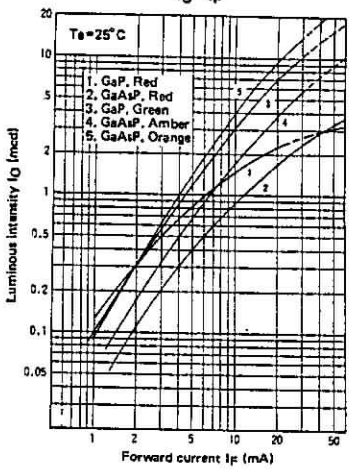
TYPICAL CHARACTERISTIC CURVES

Devices with same color (same chip in most cases) have similar opts-electric characteristics except I_O vs I_F. Curves below are for 5φ HL series as an example.

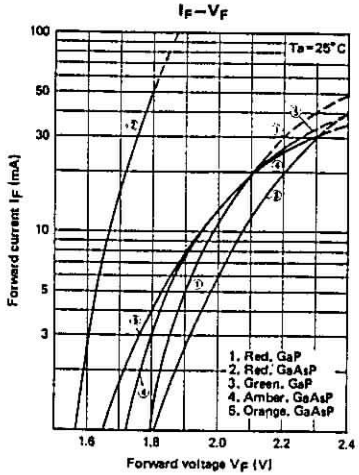
Relative Spectral Characteristics



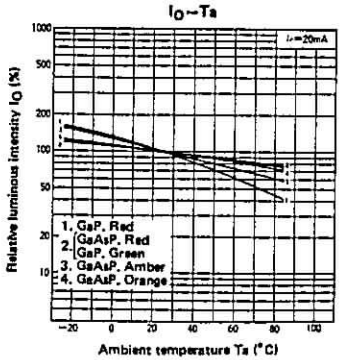
$I_O - I_F$



$I_F - V_F$



$I_O - Ta$



LETTER SYMBOLS

I_F	: Forward DC Current	I_O	: Luminous Intensity
I_{FM}	: Peak Foward Current	$I_{O(DP)}$	: Luminous Intensity of Decimal Point
I_{FP}	: Peak Foward Current (Pulse) (Duty 1/10 Pulse Width 1msec.)	$I_{O(seg)}$	: Luminous Intensity of Segment
I_R	: Reverse Leakage Current, Dark Current	λ_P	: Peak Emission Wavelength
V_F	: Forward DC Voltage	Ta	: Ambient Temperature
V_R	: Reverse Voltage	Topr	: Operating Ambient Temperature
P_D	: Power Dissipation	Tstg	: Storage Temperature

MATERIALS OF THE VISIBLE-LIGHT-EMITTING DIODES

Materials of the visible-light-emitting diodes by Matsushita Electronic Corporation consist of gallium phosphide (GaP) and gallium arsenide phosphide providing opto-electrical characteristics listed below.

Color	Materials	Wavelength at Peak Emission (Å)	Spectral Bandwidth between Half-Power Points (Å)	Static Forward Voltage (V)	Junction
Red	GaP:Zn,O	7,000	1,000	2.1	Solution-Grown
Green	GaP:N	5,650	300	2.2	Solution-Grown
Red	$GaAs_{0.6}P_{0.4}$	6,600	200	1.75	Diffusion
Amber	$GaAs_{0.15}P_{0.85}$:N	5,900	300	2.1	Diffusion
Orange	$GaAs_{0.35}P_{0.65}$:N	6,300	400	2.1	Diffusion

The GaAsP light-emitting diode is a gaseous phased Pn junction of GaAsl-xPx layer isolated by Zn diffused Epitaxial formation on the N-type GaAs or GaP substrate. Many variety of lighting colors, as shown in above list table, are obtained by changing As and P concentration ratio. GaP light emitting diode is produced by forming a N and P type epitaxial layer using solution-grown method on the N-type GaP substrate. Lighting color depends on doping impurities, and red color is gained by Zn-O dope and green by N-type dope.

The light derived from near Pn junction can be obtained efficiently out of the device as GaP is a transparent material. Especially GaP (red) light emitting diode provides us high luminance at low current, which is suitably used for D.C. low current applications such as battery operated products as the luminance are apt to saturate in the area of high current as shown in the relative spectral characteristics. GaP (green) and GaAsP light emitting diode is suitably applied for pulse driver applications as the luminance can be gained in proportion to current.

UNITS OF RADIATION

1) Luminous flux (lm, lumen)

The time rate of flow of light. Luminous flux is related to readiant flux by the eye-response curve.

2) Luminous Intensity (cd. Candela)

Luminous intensity in the perpendicular direction, of a surface of 1/60 square centimeter of a black body at the temperature of melting point 2042°K.

3) Luminance B (fL. Foot Lambert)

The luminous intensity of a surface in a given direction per unit of projected area of the surface as viewed from that direction.

CODE DEFINITION:

A = DIRECT EQUIVALENT

B = MINOR ELECTRICAL OR MECHANICAL DIFFERENCE

CROSS REFERENCE GUIDE

LITRONIX

COMPETITOR	PANASONIC	CODE
CQX13-1	LN31GPHL	B
CQX13-2	LN31GPHL	B
CQX23-1	LN21RPHL	B
CQX23-2	LN21RPHL	B
CQX33-1	LN41YPHL	B
CQX33-2	LN41YPHL	B
GL211	LN38GP	A
GL4484	LN38GP	A
GL4850	LN31GPH	A
GL4950	LN31GPH	A
LD30A	LN28RP	A
LD30-1	LN28RP	A
LD30-2	LN28RP	B
LD30-3	LN28RP	B
LD30-C	LN28CP	A
LD32C	LN28RCP	A
LD32-1	LN28RP	B
LD32-2	LN28RP	B
LD36A	LN48YP	A
LD36C	LN48YCP	A
LD36-1	LN48YP	A
LD36-2	LN48YP	A
LD37A	LN38GP	A
LD37C	LN38YCP	B
LD37-1	LN38GP	A
LD37-2	LN38GP	B
LD41A	LN21RPHL	A
LD41-1	LN21RPHL	A
LD41-2	LN21RPHL	A
LD50A	LN21RPHL	A
LD50-1	LN21RPHL	A
LD50-2	LN21RPHL	B
LD52C	LN21RCPHL	B
LD52CA	LN21RCPHL	B
LD52-1	LN21RPHL	A
LD52-2	LN21RPHL	B
LD56A	LN41YPHL	A
LD56C	LN41YCPHL	A
LD56CA	LN41YCPHL	A
LD56-1	LN41YPHL	A
LD56-2	LN41YPHL	A
LD57A	LN31GPHL	A
LD57C	LN31GCPHL	A
LD57CA	LN31GCPHL	A
LD57-1	LN31GPHL	B
LN57-2	LN31GPHL	B
LD80A	LN219RP	B
LD80-1	LN219RP	B
LD80-2	LN219RP	B
LD82A	LN219RP	B
LD82-1	LN219RP	B
LD82-2	LN219RP	B
LD86A	LN419YP	B
LD86-1	LN419YP	B
LD86-2	LN419YP	B
LD87A	LN319GP	B
LD87-1	LN319GP	B
LD87-2	LN319GP	B
OL30-3	LN81RPHL	A
OL30-6	LN81RPHL	A
OD30-30-3	LN81RPH	A
OL30-30-6	LN81RPH	A
RL-2	LN29RP	A
RL-209A	LN28RP	B
RL209-1	LN28RP	B
RL209-2	LN28RP	B
RL2000	LN21RPH	A
RL4403	LN21RPH	A
RL4480	LN28RP	B
RL4480-1	LN28RP	B
RL4480-2	LN28RP	B
RL4480-5	LN28RP	B
RL-4484	LN28RP	B
RL-4850	LN21RPH	A
RL-5054-1	LN21RPH	A
RL-5054-2	LN21RPH	A
RL-5054-5	LN21RPH	A
RLT-1	LN23SRP(H)	B
YL212	LN48YP	B
YL4484	LN48YP	B
YL4550	LN41YPH	A
YL4850	LN41YPH	A

GENERAL INSTRUMENT

COMPETITOR	PANASONIC	CODE
MV5020	LN21CPHL	A
MV5021	LN21RCPHL	A
MV5022	LN21RCPHL	A
MV5023	LN21RPHL	A
MV5024	LN21RCPHL	A
MV5025	LN21RPHL	A
MV5026	LN21RPHL	A
MV5050	LN21CPH	A
MV5052	LN21RPH	A
MV5053	LN21RCPH	A
MV5054-1	LN21RPH	A
MV5054-2	LN21RPH	A
MV5054-3	LN21RPH	A
MV5055	LN21RPH	A
MV5056	LN21RPH	A
MV5074B	LN28RP	A
MV5074C	LN28RP	A
MV5075B	LN28RP	A
MV5075C	LN28RP	A
MV5094	LN21RAHL	A
MV5152	LN81CPH	B
MV5153	LN81RPH	A
MV5154	LN81RCPH	A
MV5152	LN31GCPH	A
MV5253	LN31GPH	A
MV5254	LN31GCPH	A
MV5274B	LN38GP	A
MV5274C	LN38GP	A
MV5352	LN41YCPH	B
MV5353	LN41YPH	A
MV5354	LN41YCPH	A
MV5374B	LN48YP	A
MV5374C	LN48YP	A
MV5752	LN21CAL/LN8	B
MV5753	LN81RPH	A
MV5754	LN81RCPH	A
MV5774B	LN28RP	A
MV5774C	LN28RC	A

HEWLETT PACKARD

COMPETITOR	PANASONIC	CODE
HLMP-1300	LN28RA or LN28RP	B
HLMP-1301	LN28RA or LN28RP	B
HLMP-1302	LN28RA or LN28RP	B
HLMP-1400	LN48YP	B
HLMP-1401	LN48YP	B
HLMP-1402	LN48YP	B
HLMP-1500	LN38GP	B
HLMP-1501	LN38GP	B
HLMP-1502	LN38GP	B
5082-4480	LN28RA or LN28RP	B
5082-4483	LN28WP	B
5082-4484	LN28RA or LN28RP	B
5082-4486	LN28RCP	B
5082-4487	LN28RCP	B
5082-4488	LN28RCP	B
5082-4494	LN28RA or LN28RP	A
5082-4550	LN41YPH	A
5082-4555	LN41YPH	A
5082-4557	LN41YCPH	A
5082-4558	LN41YCPH	A
5082-4650	LN81RPH	A
5082-4655	LN81RPH	A
5082-4657	LN81RCPH	A
5082-4658	LN81RCPH	B
5082-4690	LN81RPH	B
5082-4693	LN81RPH	B
5082-4694	LN81RCPH	B
5082-4695	LN81RCPH	A
5082-4850	LN21RPH	A
5082-4855	LN21RPH	B
5082-4880	LN21RPHL	B
5082-4881	LN21RPHL	B
5082-4882	LN21RPHL	B
5082-4883	LN21CPHL	B
5082-4884	LN21CPHL	B
5082-4885	LN21CPHL	A
5082-4950	LN31GPH	A
5082-4955	LN31GPH	A
5082-4957	LN31GCPH	A
5082-4958		

LED 7 - SEGMENT DISPLAYS

LITRONIX

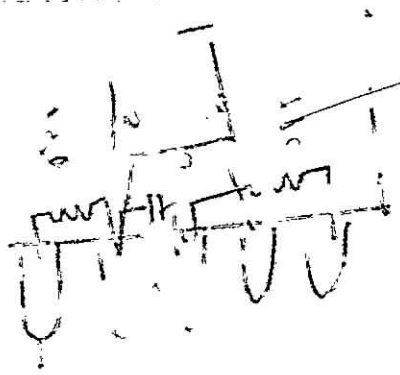
COMPETITOR	PANASONIC	CODE
DL-500	LN516RK	A
DL-507	LN516RA	A
DL-527	LN526RA	A
DL-528	LN526RK	A
DL-704	LN513RK	B
DL-707R	LN513RA	B
DL-727	LN526RA	A
DL-728	LN526RK	A
DL-4770	LN543RA/RK	B
DL-7731	LN513RA	A
DL-7734	LN513RK	B
DL-7740	LN513RK	B
DL-7751	LN514RA	A
DL-7760	LN514RK	A
DLG-7671	LN514RA	A
DLG-7673	LN514RK	A
DLO-500	LN516RK	A
DLO-507	LN516RA	A
DLO-527	LN526RA	A
DLO-528	LN526RK	A
DLO-4770	LN543RA/RK	B
DLO-7611	LN513RA	A
DLO-7613	LN513RK	B
DLO-7614	LN513RK	B
DLO-7651	LN514RA	A
DLO-7653	LN514RK	A
DLY-7661	LN514RA	A
DLY-7663	LN514RK	A

GENERAL INSTRUMENT

COMPETITOR	PANASONIC	CODE
MAN51A	LN513GA	A
MAN43A	LN513GK	B
MAN71A	LN513RA	A
MAN74A	LN513RK	B
MAN81A	LN513YA	A
MAN84A	LN513YK	B
MAN3610A	LN513OA	A
MAN3640A	LN513OK	B
MAN4510	LN514GA	A
MAN4540	LN514GK	B
MAN4610	LN514OA	A
MAN4640	LN514OK	B
MAN4710	LN514RA	A
MAN4740	LN514RK	B
MAN4810	LN514YA	A
MAN4840	LN514YK	B
MAN6610	LN526OA	A
MAN6640	LN526OK	A
MAN6660	LN516OA	A
MAN6680	LN516OK	A
MAN6710	LN526RA	A
MAN6740	LN526RK	A
MAN6760	LN516RA	A
MAN6780	LN516RK	A

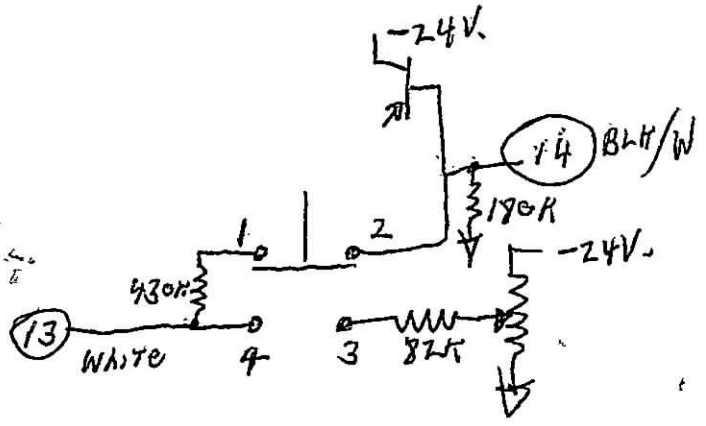
HEWLETT PACKARD

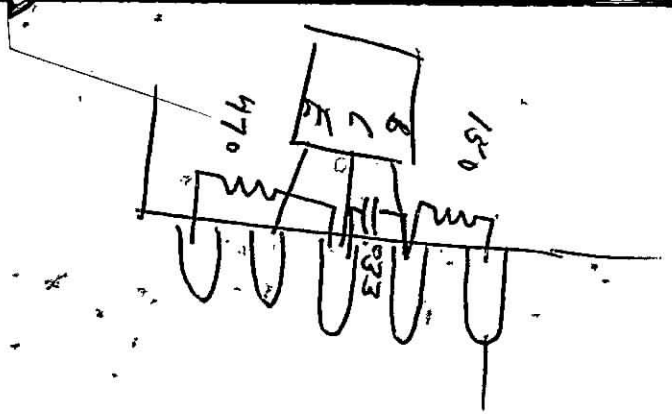
COMPETITOR	PANASONIC	CODE
HDSP-3531	LN513RA	A
HDSP-3533	LN513RK	B
HDSP-3731	LN514RA	A
HDSP-3733	LN514RK	A
HDSP-4031	LN513YA	A
HDSP-4033	LN513YK	B
HDSP-4131	LN514YA	A
HDSP-4133	LN514YK	A
HDSP-7611	LN513RA	A
HDSP-7613	LN513RK	B
HDSP-7621	LN513YA	A
HDSP-7623	LN513YK	B
HDSP-7631	LN513GA	A
HDSP-7633	LN513GK	B
HDSP-7651	LN514RA	A
HDSP-7653	LN514RK	A
HDSP-7661	LN514YA	A
HDSP-7663	LN514YK	A
HDSP-7671	LN514GA	A
HDSP-7673	LN514GK	A
HDSP-7731	LN513RA	A
HDSP-7740	LN513RK	B
HDSP-7751	LN514RA	A
HDSP-7760	LN514RK	A

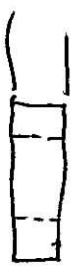


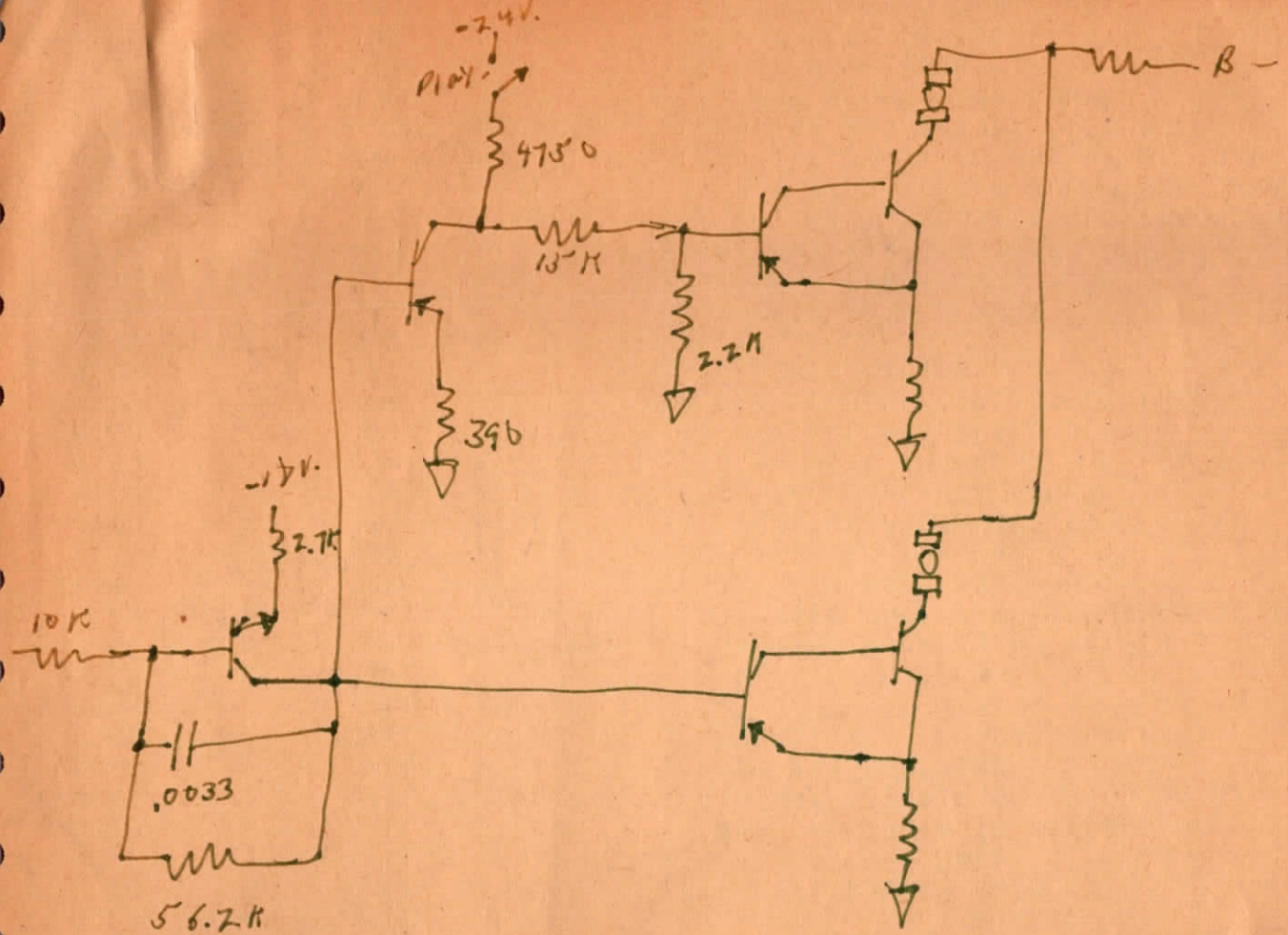
WESTLINK
918-788-7333

E C B

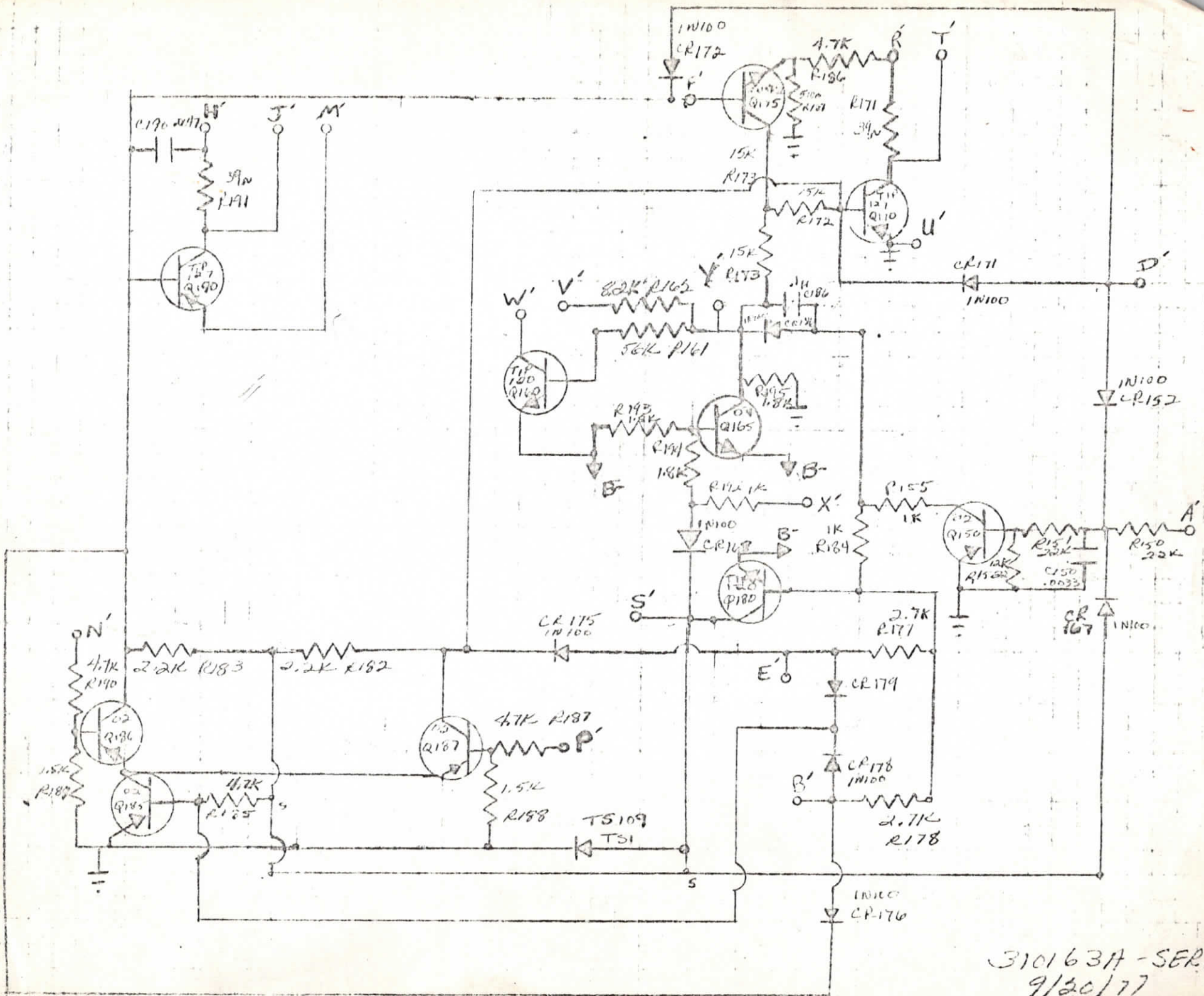



470
150
633



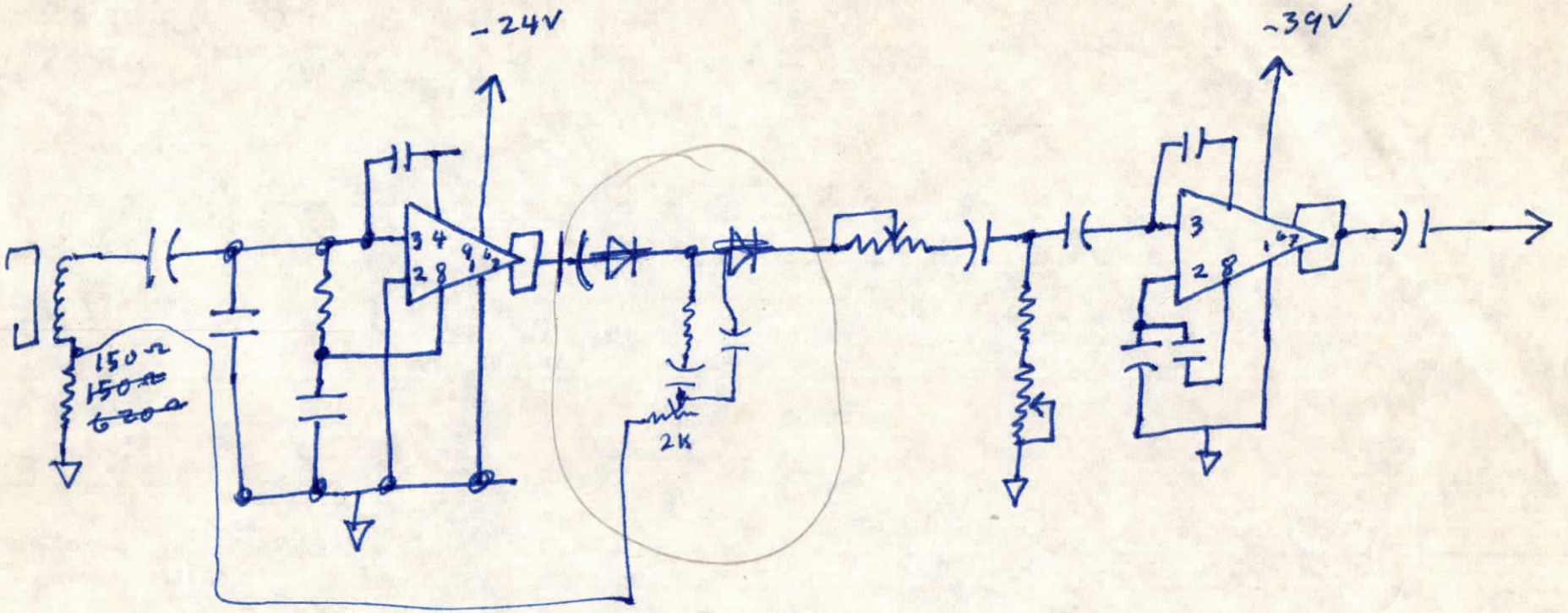

-7.4V.
PICK
4750
13K
2.2K
B-
390
-17V.
2.7K
10K
.0033
56.2K

```
0000 START    CALL   CLRBF       ;CLEAR THE INPUT BUFFER
0010          CALL   INPUT       ;GET DATA FROM MACHINE
0020          CALL   NEGA1       ;CHECK FOR BAD READ
0030          CALL   SCALE       ;SCALE DOWN DATA TO FIT 8 BITS
0040          CALL   ZERCK       ;ELIMINATE SPURIOUS ZERO COUNTS
0050          CALL   NEGA2       ;CHECK FOR BAD READ
0060          CALL   FOFO        ;CONVERT DATA TO READABLE FORM
0070          CALL   NEGATE
0080          RET
0090 SCALE    LXI    H,BUFFER-2  ;LOAD THE ADDRESS OF BUFFER
0100 SCAL1    LXI    D,BUFEND-2  ;MODIFIED END OF BUFFER ADDRESS
0110          MOV    A,H         ;GET THE HIGH ORDER COUNT
0120          CMP    D           ;SEE IF WERE THROUGH
0130          JNZ    SCAL2       ;IF NOT, KEEP SCALING DOWN
0140          MOV    A,L         ;GET THE LOW ORDER COUNT
0150          CMP    E           ;SEE IF WERE THROUGH
0160          JNZ    SCAL2       ;IF NOT, KEEP SCALING DOWN
0170          XRA    A           ;CLEAR ACCUMULATOR AND CY FLAG
0180          RET                ;ALL DONE SCALING
0190 SCAL2    INX    H
0200          INX    H           ;GET BYTE FROM MEMORY
0210          MOV    A,M         ;PUT HIGH ORDER IN A
0220          ANI    OFFH        ;SEE IF ANYTHINGS THERE
0230          JNZ    DIVALL      ;IF SO, DIVIDE BUFFFER LOCATIONS BY 2
0240          JMP    SCAL1       ;IF NOT HERE, CHECK ALL OTHER LOCATIONS
0250 DIVALL   LXI    H,BUFFER    ;LOAD THE STARTING ADDRES OF BUFFER
0260 DIVA1    LXI    D,BUFEND    ;LOAD THE END ADDRES OF BUFFER
0270          MOV    A,H         ;GET THE HIGH ORDER COUNT
0280          CMP    D           ;SEE IF WERE THRU
0290          JNZ    DIVA2       ;IF NOT KEEP DIVIDING
0300          MOV    A,L         ;GET THE LOAD ORDER COUNT
```



821

3101631 - SERVO CA
9/20/77

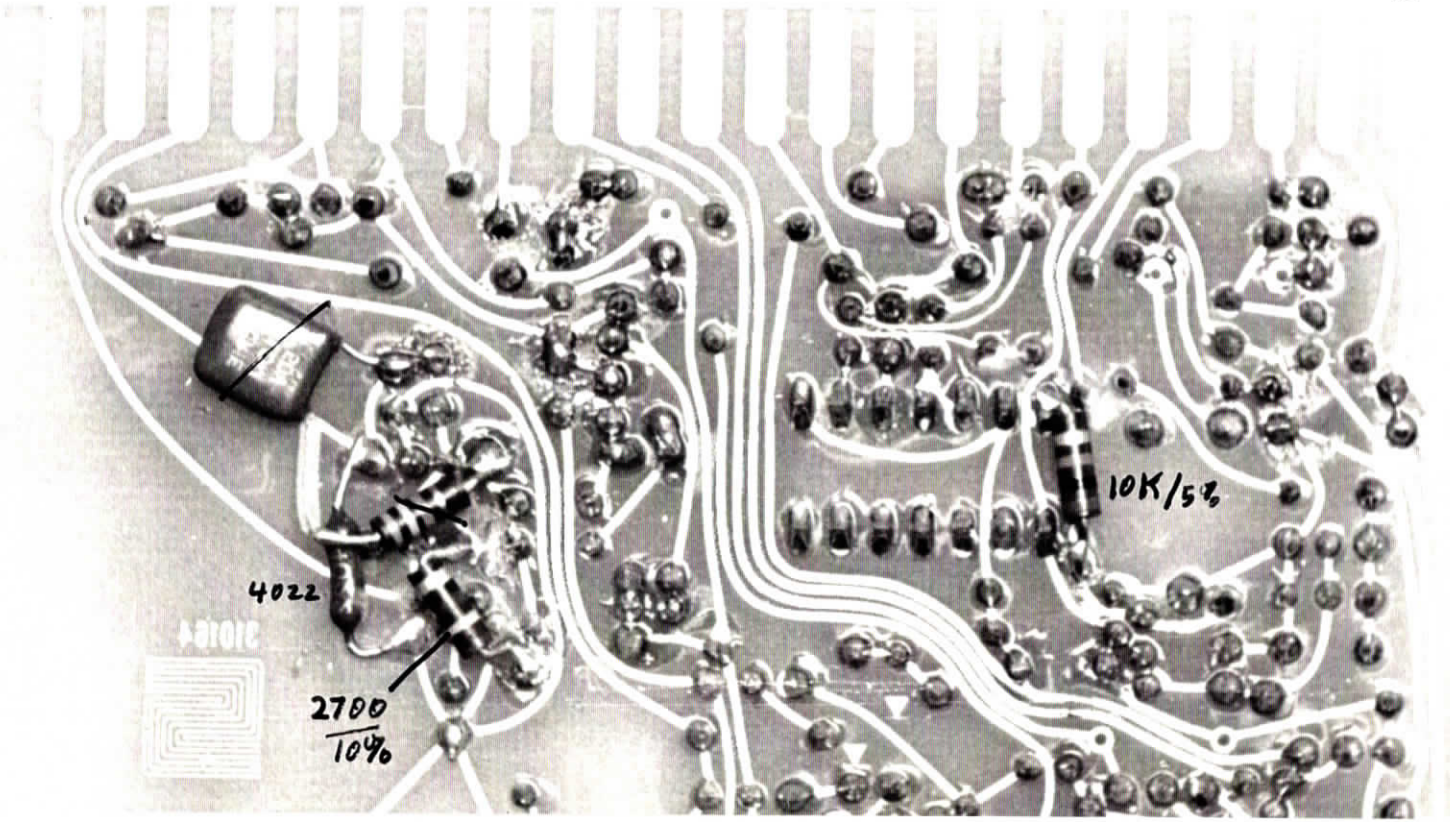

-24V
-39V
150Ω
150Ω
620Ω
2K

LEFT BOARI

PRINT IS
BACK ASSWARI

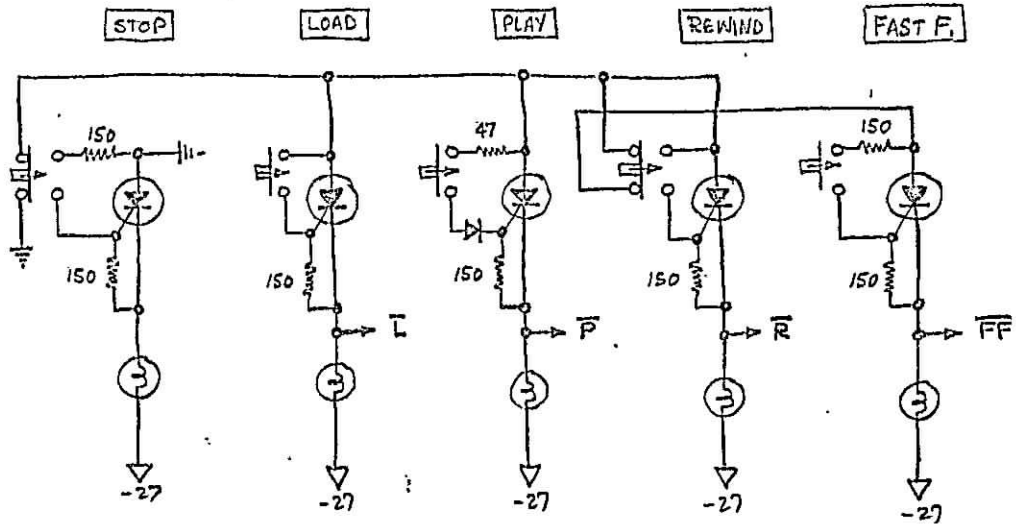
Z

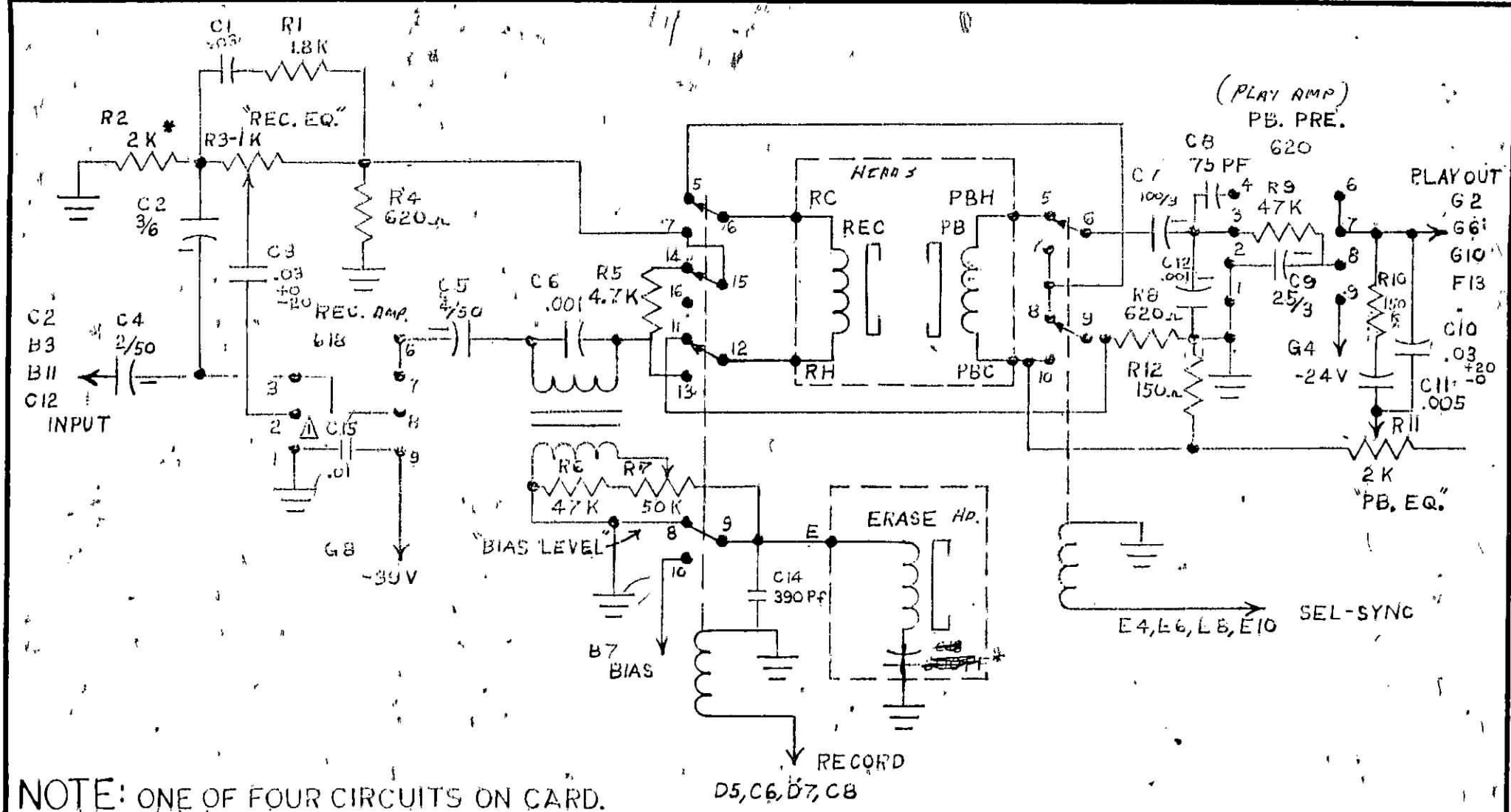
A



SIMPLIFIED CONTROL SCHEMATIC

* COMMUTATING CAPS NOT SHOWN





NOTE: ONE OF FOUR CIRCUITS ON CARD.

*ADJUSTED DURING FINAL ASSEMBLY.

CHAN.	1	2	3	4
RC	E2	A4	A10	D11
RH	D1	A2	A12	D13
PBC	H1	H5	H9	G12
PBH	H3	H7	H11	H13
E	D3	A6	A8	D9

⚠ C15 IS ONLY USED IN 1 OF 4 CIRCUITS ON EACH CARD

STEPHENS ELECTRONICS

SCALE:	APPROVED BY:	DRAWN BY DMS
DATE: 12-22-69		REVISED

PRE AMP ELECTRONICS

811C-3000

DRAWING NUMBER 110912

8½X11 PRINTED ON NO. 1000H CLEARPRINT

BTX SHADOW SOFTWARE #RN080781DC

INPUT PORT ADDRESSES

BIT	5400 PA	5401 PB	5402 PC	5403 CONT
7	SLOW SLEW	NC		
6	CHASE EN	NC	SLAVE	
5	4500 MODE	NC	MASTER	
4	VIDEO MODE	NC		
3	AUTO/FRAME	NC		
2	SLAVE EN	NC	M SHUTTLE	
1	KEYBOARD?	NC	S PAUSE TALLY	
0	?	VIDEO PULSE	M PAUSE TALLY	

	5800	5801	5802	5803
7				
6				
5			CHASE LED ON	
4				
3				
2				
1	CHASING LED ON	24 FR		
0	S EN LED ON	25 FR		

TAN ∅ SECTOR

BKFD 1,2,3,5,7,9

DLV
FHV
UEV
HEV
HMV

CAODEMS

393
407
418

8250 IC129 12 13

7438 IC9-8 9 1 (10) FFD

IC9-10

BTX SHADOW SOFTWARE #RN080781DC

INPUT PORT ADDRESSES

BIT	5400 PA	5401 PB	5402 PC	5403 CONT
7	SLOW SLEW	NC		
6	CHASE EN	NC	SLAVE	
5	4500 MODE	NC	MASTER	
4	VIDEO MODE	NC		
3	AUTO/FRAME	NC		
2	SLAVE EN	NC	M SHUTTLE	
1	KEYBOARD?	NC	S PAUSE TALLY	
0	?	VIDEO PULSE	M PAUSE TALLY	

	5800	5801	5802	5803
7				
6				
5			CHASE LED ON	
4				
3				
2				
1	CHASING LED ON	24 FR		
0	S EN LED ON	25 FR		

HYLAN CASS TUES - 4:00 PM
DR. SUSSER
2730 Wilshire Suite 110
28TH HARVARD X ST.

Applied Magnetics Belgium N.V.
Magnetic Head Division
Telex: 31831 Phone: (0)14/41.59.11

ELECTRICAL TEST SHEET

TRACK		1	2	3	4	5	6	7	8	9	10	11	12
Peak frequentie	(KHz).												
Eo at peak frequentie	(mVRMS)												
Eo at 20 KHz	(dB)												
Eo at 100 Hz	(dB)												
X-Talk	(dB)												
Erase level at 1 Kc	(dB)	-81	-81	-81	-82	-85	-82	-83	-84	-81	-83	-82	-83
L at 1 Kc	(mH)	1.78	1.83	1.84	1.83	1.81	1.82	1.81	1.79	1.85	1.86	1.83	1.80
DCR	(Ω)	45.8	46.2	46.4	46.2	46.5	46.0	46.4	46.0	46.1	46.0	46.6	46.2

TRACK		13	14	15	16	17	18	19	20	21	22	23	24
Peak frequentie	(kHz)												
Eo at peak frequentie	(mVRMS)												
Eo at 20 KHz	(dB)												
Eo at 100 Hz	(dB)												
X-Talk	(dB)												
Erase level at 1 Kc	(dB)	-83	-82	-84	-86	-84	-83	-82	-85	-85	-84	-85	-84
L at 1 Kc	(mH)	1.83	1.82	1.86	1.83	1.79	1.80	1.81	1.86	1.82	1.81	1.84	1.87
DCR	(Ω)	46.3	46.2	46.0	46.3	46.4	46.1	46.3	46.3	46.3	46.2	46.3	46.1

Wayne E. Carr, Ph.D.
6155 Plumas St. # 278
Reno, NV 89509

11-24-96

John Stephens
P.O. Box 801871
Santa Clarita CA 91380

This is a statement of my agreement to pay John Stephens the amount of $1,000.00 in monthly installments of a minimum of 100.00, beginning the first of february 1997 and continuing there after. This will be in repayment of a loan sent to me in November 1996

Wayne E Carr PhD
11-24-96

P.S. Thanks again!!
I'm also having the copy of the drawing my friend had last week.

11/24/1996 19:05 7028258980 WAYNE CARR PHD PAGE 01

1/05

Wayne E. Carr, Ph.D.
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Reno, NV 89509

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PS Thanks again!!
I'm also faxing the copy of the drivers license to you

11/24/1996 19:0[illegible] 7028258980 WAYNE CARR PHD PAGE 01

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13 Central Way #387
Kirkland, WA 98033
1 888 540 6085
waynecarr@remoteviewers.com
WWW.remoteviewers.com

FINAL QUALITY ACCEPTANCE

WARNING
When unloading and unpacking this shipment, Harris requests that this will be done in compliance with static control practices. This means the use of a grounded wrist strap at a static controlled workstation for any electrical and/or visual/mechanical verification. When returning product to Harris, use the original antistatic packing without adding non-antistatic materials to avoid ESD damage and liability for payment of damaged parts as covered under the terms and conditions of the purchasing contract. Thank you.

INVOICE TO
R. W. ELECTRONICS
1445 MAIN ST.
TEWKSBURY MA 01 [illegible]

	SHIPPER NO.	PART.SHIP NO.	NO. TYPE CONT.	WEIGHT	WAYBILL NUMBER
NOW	7501-BPC	F607			

CUSTOMER P.O. NUMBER	GOV'T. PRIME CONTRACT NO. & RATING	CUST. CODE	CUSTOMER NO.
N/A		RWE	95777-00

SALES ORDER NO.	REV.	DATE ENTERED	SHIP VIA	P.P.D.	COLL.	F.O.B. POINT	COMMODITY NO.
000007	B	062587	BEST SURFACE		X	PALM BAY, FLA. [X] DEST [ ]	

TERMS	COFC	C.S.I.	G.S.I.	IMPORT DOCUMENT NO.	EXPORT DOCUMENT NO.
000000CIA	N	N	N		

LINE ITEM	HARRIS PART NO. / CUSTOMER PART NO.	SPECIFICATION NO. / REV. / QUOTE NO.	DELIVERY REQUESTED	DELIVERY SCHEDULE	QUANTITY ORDERED	QUANTITY BACK ORDERED	QUANTITY THIS SHIPMENT
03	HM1-7611-5	42 8718230A	071587	071587	26408		26408
	LA#/QTY: 8A40049 (26408)						
	SPECIAL CUSTOMER SERVICE INSTRUCTIONS						
	OPER: WENDY PHON: 7051			DT: 062587			
	CONTACT CLARK BEFORE SHIPPING						
	LINE ITEM 01 NEEDS TO SHIP UPS BLUE COLLECT.						
	ALL OTHER LINE ITEMS SHIP CONSOLIDATED						
	FREIGHTWAY COLLECT.						
	DC 8727						

FINAL PAGE 1 LAST PAGE

THIS IS TO CERTIFY THAT ALL ITEMS INCLUDED IN THIS SHIPMENT HAVE BEEN INSPECTED AND CONFORM IN ALL RESPECTS TO THE SPECIFICATIONS AND REQUIREMENTS APPLICABLE TO THE ABOVE REFERENCED PURCHASE ORDER. THE EXCLUSIVE REMEDY FOR NON-COMPLIANCE OF AN ITEM WITH THIS CERTIFICATION IS THAT SET FORTH IN THAT CLAUSE ENTITLED "WARRANTY" UNDER WHICH THE ITEMS ARE SOLD.

CERTIFICATE OF COMPLIANCE

George Callie
MANAGER, QUALITY ASSURANCE

APPROVALS			
PLANT CLEARANCE	G.S.I.	C.S.I.	L.A. REFERENCE
60557 1-JUL-87			

025-M621

ORIGINAL TRAVELER COPY

CLIENT:

PHONE:
PROJECT:

DATE:	START TIME/DESCRIPTION	END TIME	HOURS/$/HR

EAST COAST OFFERING
SOUND LAB

8317 Philadelphia Road
Baltimore MD 21237

301/574/4223

Norman F. Noplock engineer/owner

March 23,1984

STEPHENS ELECTRONICS, INC.
313 Pacific Avenue
Burbank CA 91505

Mr. STEPHENS

First I would like to thank you for helping me make a decision on the Stephens 821B - 104A - 40/20 repair. I am enclosing 850.00 dollars as deposit for starting the repair work. We discussed a thousand dollar deposit, however eight fifty is more agreeable with my present budget. If additional money is needed to begin the repair, please notify me. I will have secured money for the entire repair cost by April 6/84.

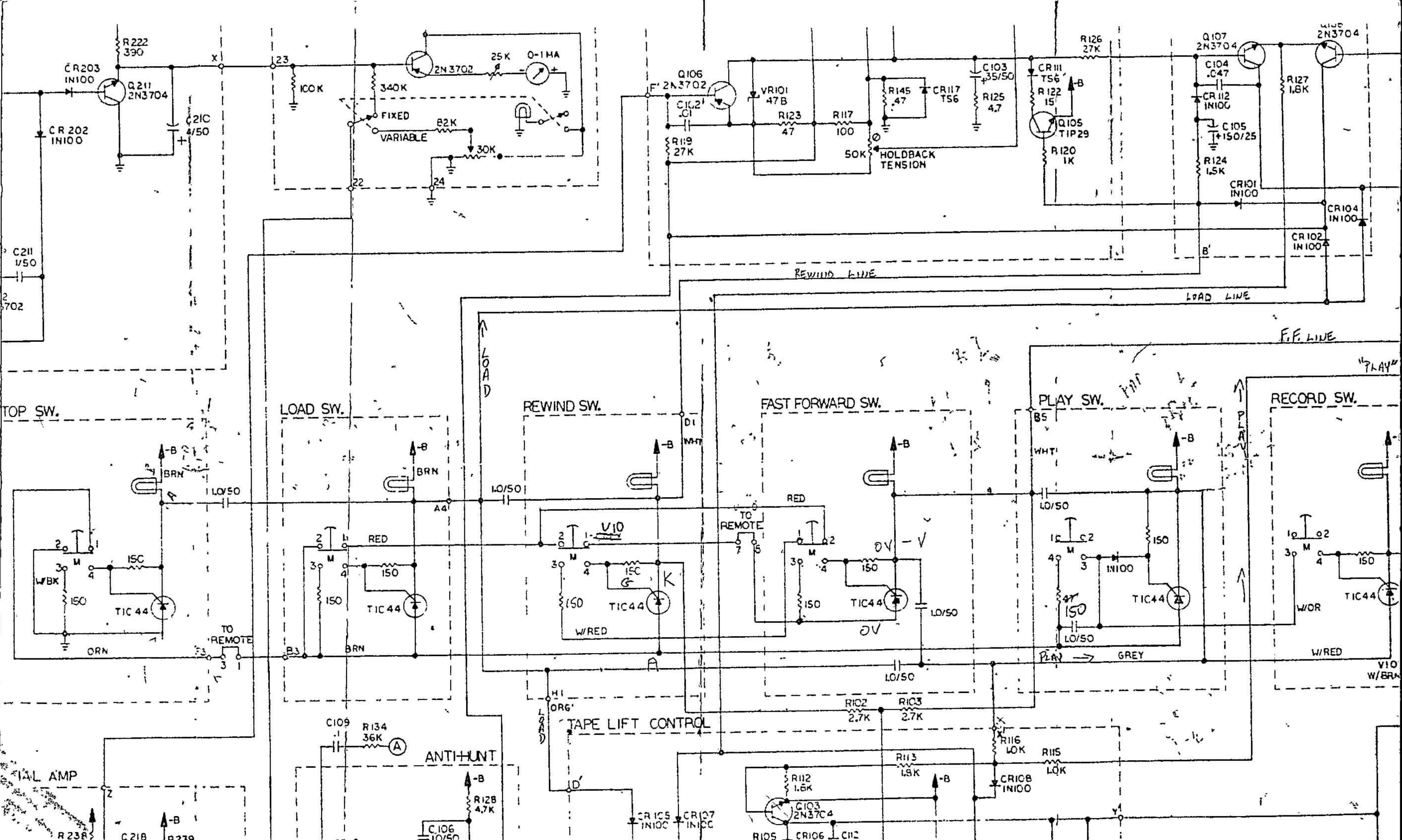
Please return comment on the price of a splice block for the machine and any information prescribing allignment tapes.

Please return comment on information describing a Stephens 2 Track Mastering Machine with editing facilities. We are in the market to purchase a high quality mastering machine.

Cordially yours

Norman F. Noplock

Norman F. Noplock



R222
390
CR203
IN100
Q211
2N3704
CR202
IN100
C21C
4/50
C211
1/50
100K
340K
2N3702
25K
0-1MA
FIXED
VARIABLE
82K
30K
Q106
2N3702
C102
.01
VR101
47B
R119
27K
R123
47
R117
100
50K
HOLDBACK
TENSION
R145
.47
CR117
TS6
C103
35/50
R125
4.7
R126
27K
CR111
TS6
R122
15
Q105
TIP29
R120
1K
Q107
2N3704
C104
.047
CR112
IN100
C105
150/25
R124
1.5K
R127
1.8K
2N3704
CR101
IN100
CR104
IN100
CR102
IN100
REWIND LINE
LOAD LINE
F.F. LINE
"PLAY"
LOAD
TOP SW.
LOAD SW.
REWIND SW.
FAST FORWARD SW.
PLAY SW.
RECORD SW.
BRN
WHT
RED
1.0/50
TO REMOTE
TIC 44
TIC44
150
W/BK
ORN
W/RED
IN100
GREY
W/OR
W/BRN
10/50
R102
2.7K
R103
2.7K
TAPE LIFT CONTROL
ANTI-HUNT
C109
R134
36K
R128
4.7K
C106
10/50
R116
10K
R115
10K
R113
1.8K
CR108
IN100
R112
1.6K
Q103
2N3704
CR105
IN100
CR107
IN100
R105
CR106
C112
C218
R239
R238
IAL AMP

RECORDING SERVICES COMPANY

TROUBLE REPORT

() 1200 () A
() B
() ATR100 () C
() D
(X) Stephens () E
() F
() Ad-Sm (X) 8110 167
() Q Lock
() DOLBY_____

Date: 7/22/84

Your name: Bruce/Ken

Client/job contact/phone Mix@RSC

Circle: 7½ (15) 30 ips (A3) _____ 250 456 _____ PBO
(other) (other)

Nature of problem as first noted:
(how long machine running, settings, how discovered, etc.)

on checkin from previous rental W/C 7/21/84 it was found that ch 7 output PLAYBACK level too high/ distorted; could not turn down; no TRIMPOT adjustment has an effect. ## changed lower plugin module with 13-16, problem went to 15. Suspect open feedback loop.

Initial corrective action taken: exchg 5-8 & 13-16 lower modules.

Thank you for taking the time to fill out this form.

RECORDING SERVICES COMPANY 766-7191

TROUBLE REPORT

() 1200 () A
() B
() ATR100 () C
() D 8117
() Stephens () E 16T
() F
() Ad-Sm () _____
() Q Lock
() DOLBY_____

Date: 12/26/84

Your name: Bruce Biddick

Client/job contact/phone Bt Best

Circle: 7½ (15) 30 ips +3 _____ (other) 250 456 _____ (other) (PBO)

Nature of problem as first noted:
(how long machine running, settings, how discovered, etc.)

1. ch 16 meter - no movement, probably burned out.

2. FF, RWD Buttons didn't work (intermittently) i.e no response when FF/Rwd buttons pressed.

3. Ch 6 HISSY.

Initial corrective action taken:

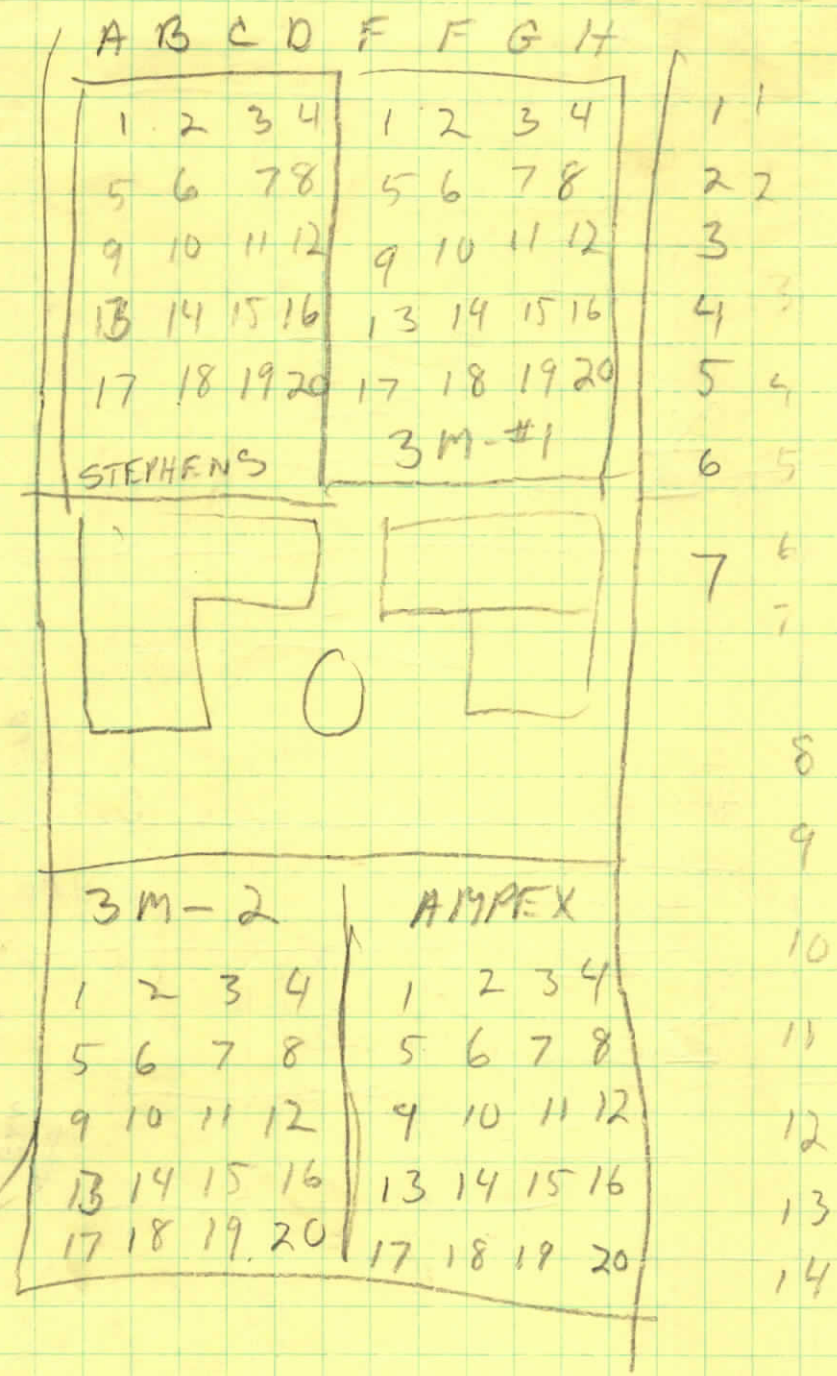
1. none, session was ch 1-8 @ 30 only.

2. removed, reseated transport cont'l button module; Temporarily cured. Problem recurred periodically.

3. swapped green 620 amp module with ch 11. Chan 6 cleaned up.

2+3 epsided when machine was received from Coast.

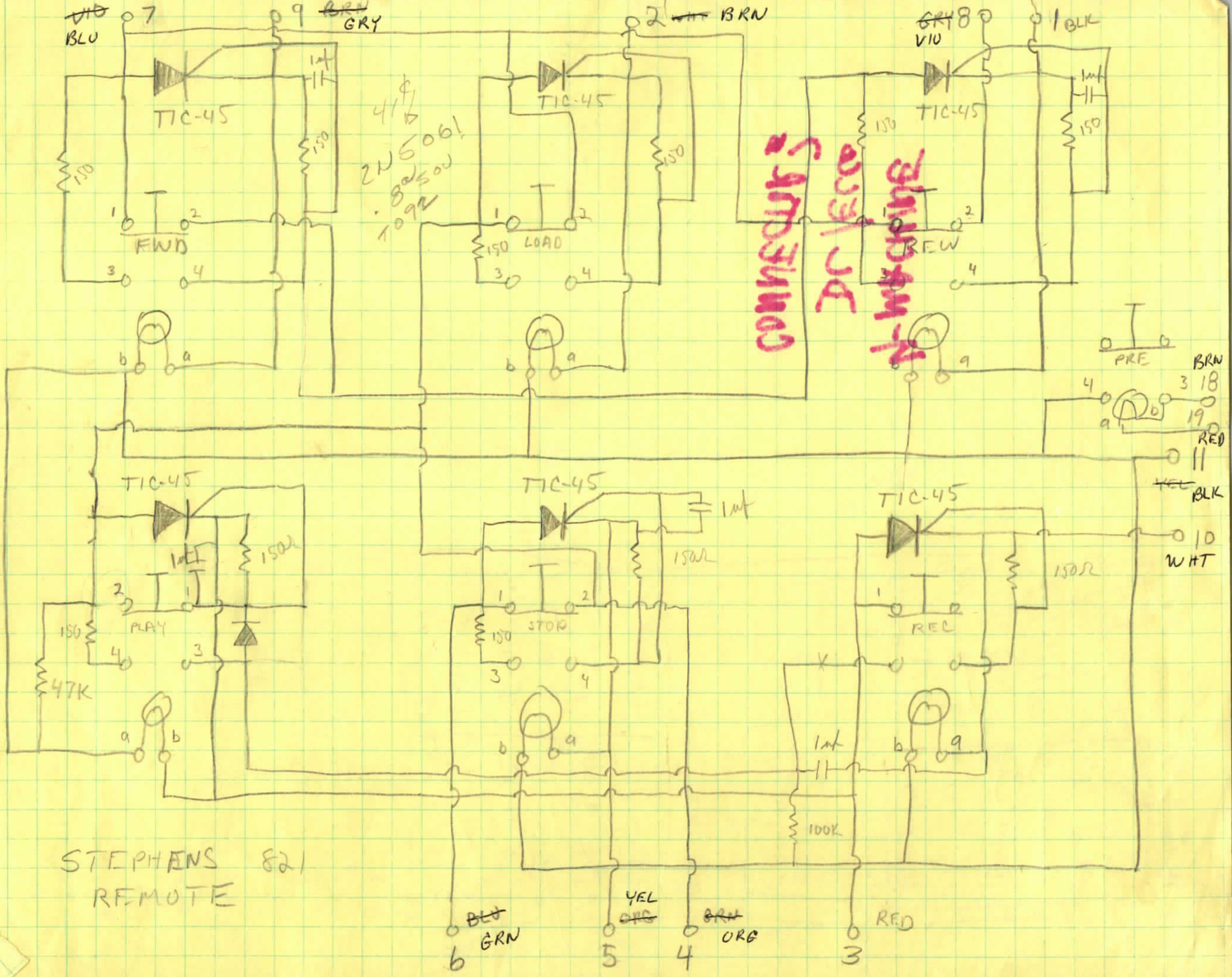
Thank you for taking the time to fill out this form.



4 MACHINE DL/ECC CONNECTOR?

BLK — 1
ORG — 5
WHT — 2
GRN — 4
RED — 3
YEL — 11

BLU — 6
VIO — 7
GRY — 8
BRN — 9
WHT — 10



STEPHENS 821
REMOTE

BUTTON ENGRAVING

30.00 SETUP
+5.00 PER NOMENCLATURE — 0
+ 15¢ CHARACTER - 30¢ ea

30.00
35.00
60¢ X 22
65
13.20
78.20 BUTTONS

PUNCH HOLES IN PANEL

20' ~~9/16~~ SET UP 30.00 per,

REMOTE 22 - 5/16 10¢ hole

~~PANEL~~

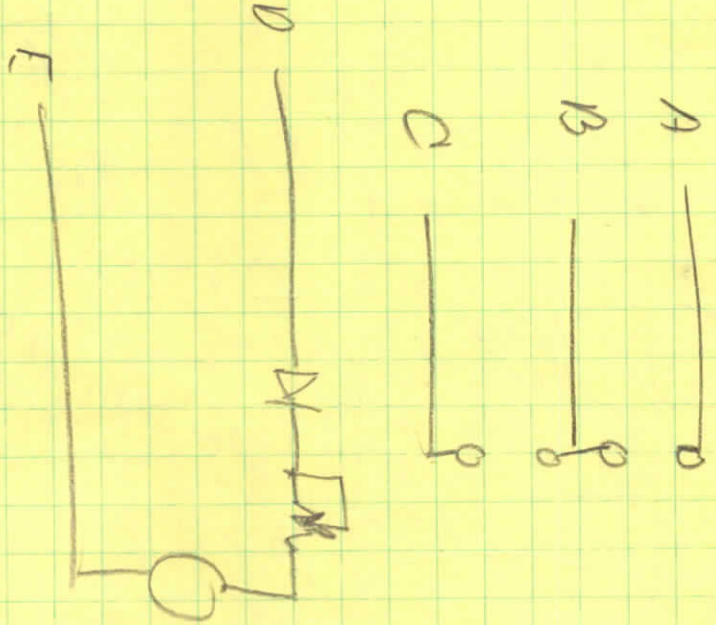
SHEAR
SET UP 10.00
1.50 PANEL

10 WORKING DAYS

MATERIAL ~~1.50 PANEL~~

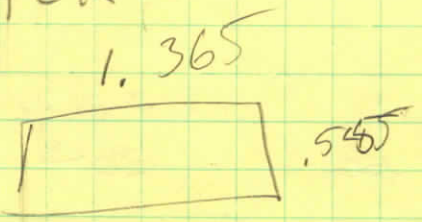
COUNTER SINK 5.00 Set up
10¢ hole

ANODIZING 25.00



2 TRACK 1

2 4 TRACK



2 TK 3

938
1,125
2.063

2.38

CLEAK 4-40
#29

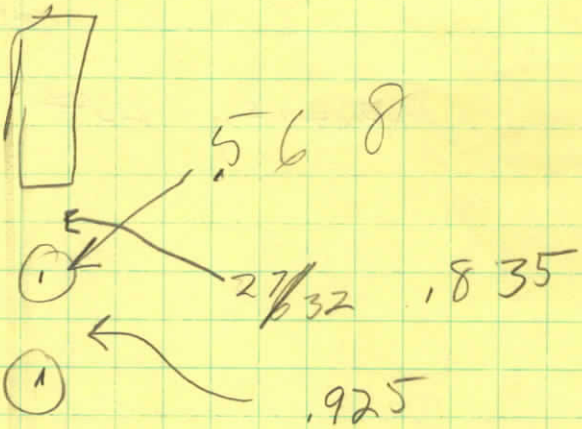
.578

13

.136

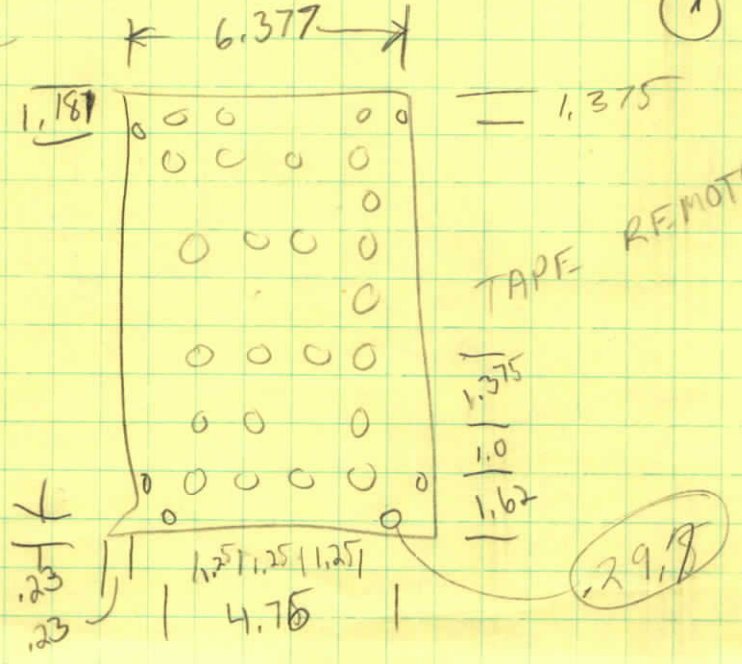
1,365
1,375
3,740

1885
2|3770
17
16
10



27/32

844
250
594



925
594
1519

Farrand INDUCTOSYN® Position Transducers

Applications:

Rotary Inductosyn transducers

Rotary tables
Angular data transmission
Electronic dividing heads
Electronic shaft speed ratio control
Gear testing
Theodolites
Antenna positioning and readout
Missile guidance
Gunfire control
Inertial navigation
Computer peripheral devices

Linear Inductosyn transducers

Machine tools
Measuring machines
Computer disc memory
Linear actuators
Precision screw testing

FARRAND CONTROLS
99 Wall Street/Valhalla, N.Y. 10595/Tel.: (914) 761-2600/Telex: 131554

INDUCTOSYN® is a registered trade mark of Farrand Controls.

Advantages of Inductosyn transducers

- Highest accuracy encoding . . . to ½ arc-second full circle or 50 micro-inches per 10-inch segment.
- Repeatability better than 0.1 arc-second or 10 micro-inches.
- Analog and/or digital outputs relatively insensitive to decentering or misalignment.
- Direct mounting eliminates errors introduced by lead screw accuracy and backlash.
- Meet MIL E-527B and MIL Std. 202B specifications for shock, vibration and temperature.
- Linear 10-inch segments can be positioned to compensate for fixed errors of machine—we have supplied spars with 10-inch Inductosyn sections up to 92 feet in length.
- Can be used as either transmitters or receivers.
- Impervious to oil vapor.
- Operable with carrier frequencies from 1 KHz to 1 MHz or more.
- Rugged . . . used in inertial navigation and missile guidance systems as well as precision N/C machining centers.

This array of rotary and linear Inductosyn transducers and their elements provides an idea of the variety and range of sizes available. Inductosyn steel tape scales come in any length up to 60 feet, with longer lengths on request. Farrand Digital Readout console appears at top right. Pulse converter IC modules are shown at the left.

Ultra-precision angular and linear measurement, analog or digital

Farrand Inductosyn rotary and linear position transducers rate among the world's most accurate encoding devices, with accuracy as fine as ½ arc-second and 50 millionths of an inch respectively and infinite resolution capability. Each type has two elements inductively coupled across a small air gap. Since they don't touch, there is no wear.

The rotary Inductosyn transducer...

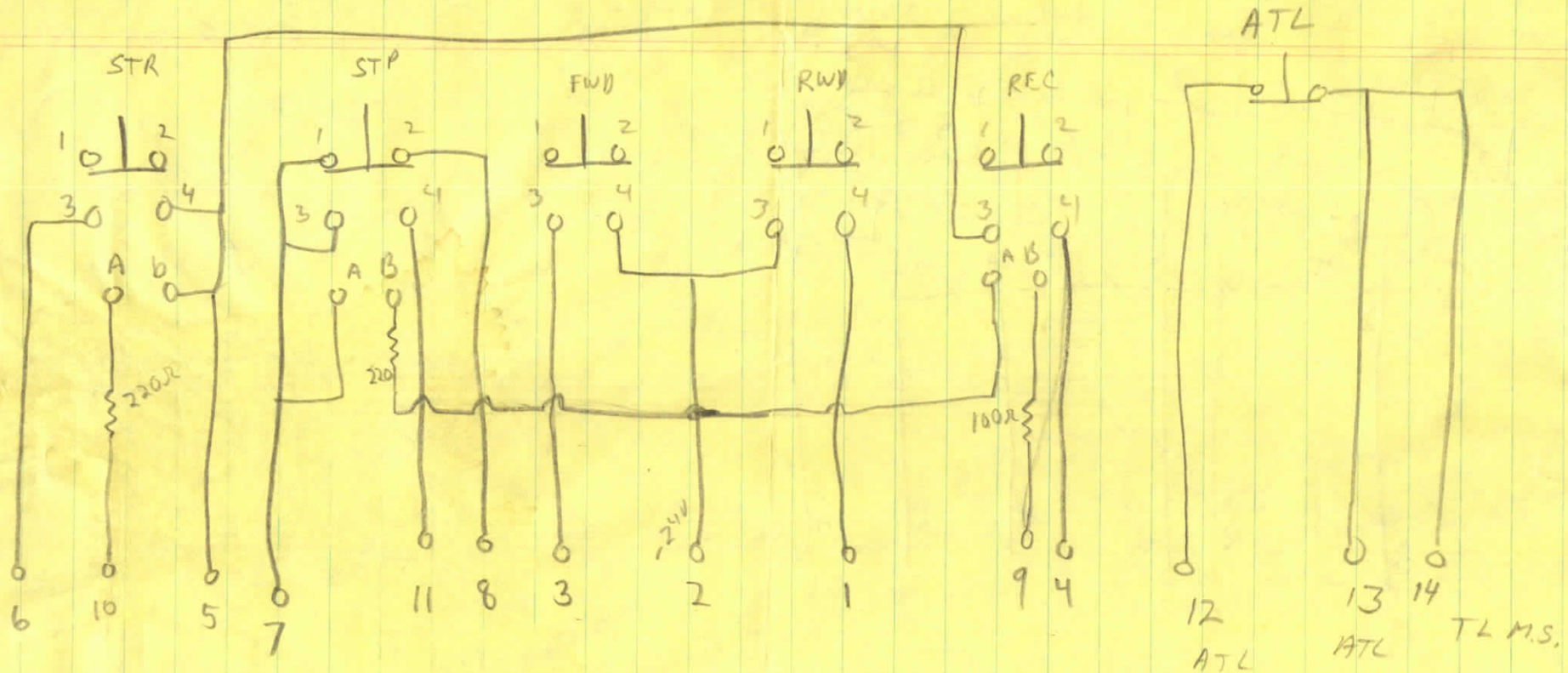
. . . consists of a rotor and a stator. Either can be attached to the rotating shaft whose motion is to be measured, while the other is fixed to the bearing or mount. Non-contacting transformer pick-offs are also provided, eliminating the need for slip rings or other connections to the rotor. Any angle measured is determined by full circle averaging of all the included cycles, producing a degree of precision unapproached by any other shaft encoder. Base materials cover a broad spectrum of metallic and non-metallic substances, including stainless steel, aluminum, titanium, Invar, beryllium, plastic and even ceramics.

The linear Inductosyn transducer...

. . . includes a scale and a slider. As with the rotary type, either can be attached to the moving or stationary element. One moves relative to the other in a straight line. The linear model achieves its own very high degree of accuracy by cycle averaging over the full length of the slider. Scales are available in 10-inch (254-mm) bar segments and on continuous steel tape to any length.

The Farrand pulse converter...

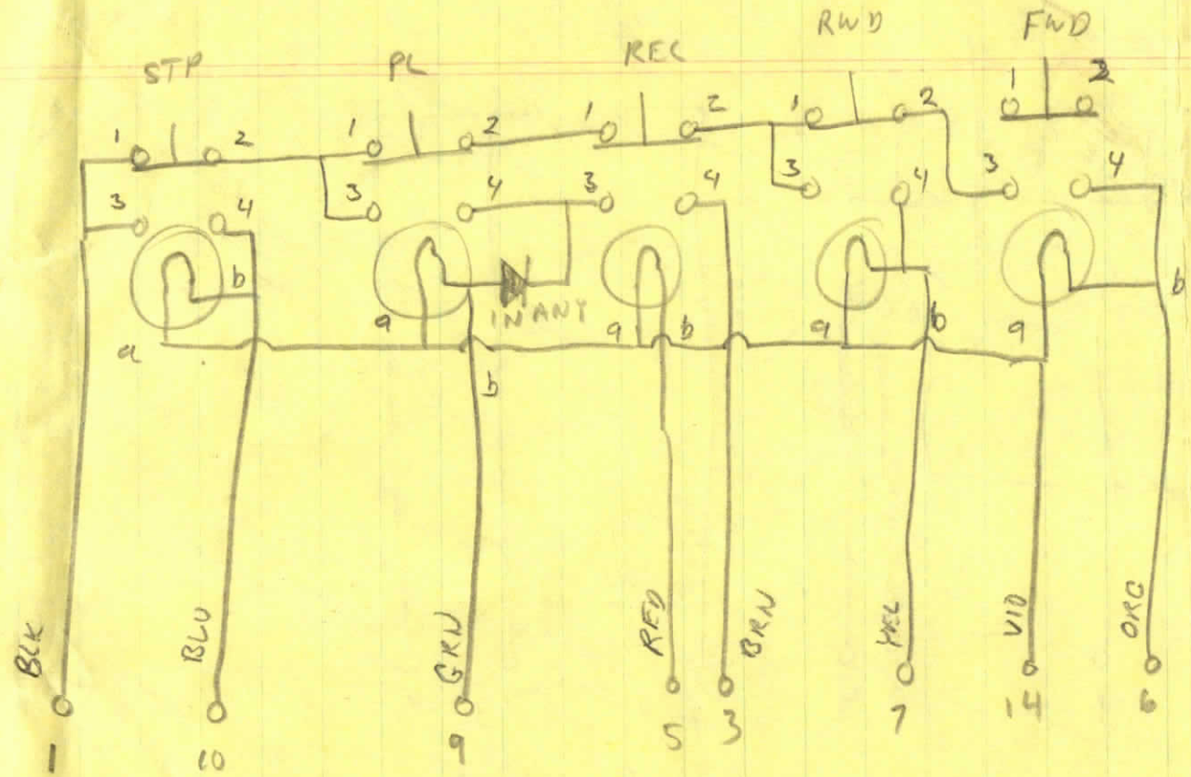
. . . is a closed loop electronic servo. It produces sine-cosine data derived from the processed position error signal from a rotary or linear Inductosyn transducer. The pulse converter's output consists of TTL compatible signals. The conversion, which can be either A/D or D/A, can generate as many as 20,000 pulses per cycle. With high speed tracking, dynamic readout can be as high as 48,000° per minute and 4800 inches per minute.



NON MOTION SENSE

1-9 ONLY

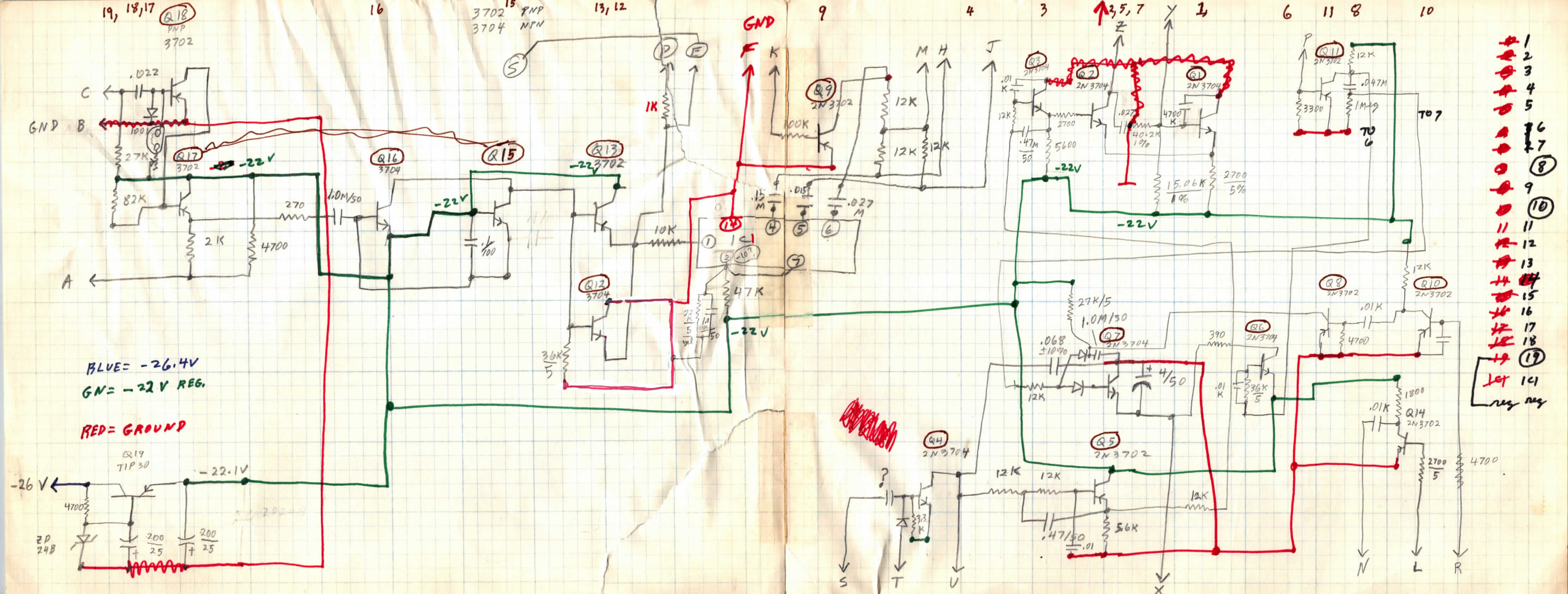
SCULLY



3M 79

4
L.B

2 + 4
T.L.D.



19, 18, 17
Q18
PNP
3702
16
3702 PNP
3704 NPN
13, 12
GND
9
4
3
2, 5, 7
1
6
11
8
10
C
GND B
A
Q17
3702
Q16
3704
Q15
Q13
3702
Q12
3704
Q9
2N3702
Q3
Q2
2N3704
Q1
2N3704
Q11
2N3702
TO 7
Q8
2N3702
Q10
2N3702
Q7
2N3704
Q6
2N3704
Q5
2N3702
Q4
2N3704
Q14
2N3702
Q19
TIP 30
-26 V
-22.1V
-22V
BLUE= -26.4V
GN= -22V REG.
RED= GROUND
S
T
U
X
N
L
R

NOTES ON THE STEPPERS.
REFER TO MASTER SCHEMATIC

960 ~ at 15 IPS

SQUARE WAVES ARE BOOSTED TO COMPENSATE FOR IRREGULAR MASKING DISK

. EMITTER FOLLOWER BUFFER

COINCIDENTAL COUNTER

WATCH FIRES Q11 AND CHARGES C16.

Q11 IS NORMALLY OFF DURING PLAY

OUT OF C16 — COMES, SAWTOOTH WAVE

FED THRU LOW PASS FILTER

TAKES OUT HI FREQ COMPONENTS AND GIVES STEADY DC COMPONENT WHICH IS FED TO 2N3702 THEN 2N3704 WHICH GIVE TEMPERATURE COMPENSATION BECAUSE ONE XISTOR IS PNP + THE OTHER IS NPN

THE HIGHER THE PRF THE HIGHER THE NEG VALVE.

(ANTI HUNT) C17 TAKE V

Q14

AS MORE CURRENT GOES THROUGH
THE TAKE UP MOTOR

Q14 GOES MORE NEG

1A FREQ ROLL OFF →
ON SERVOS

PHASE DETECTOR

60 HZ LINE PHASE ANGLE
60 HZ COUNTDOWN
CAP

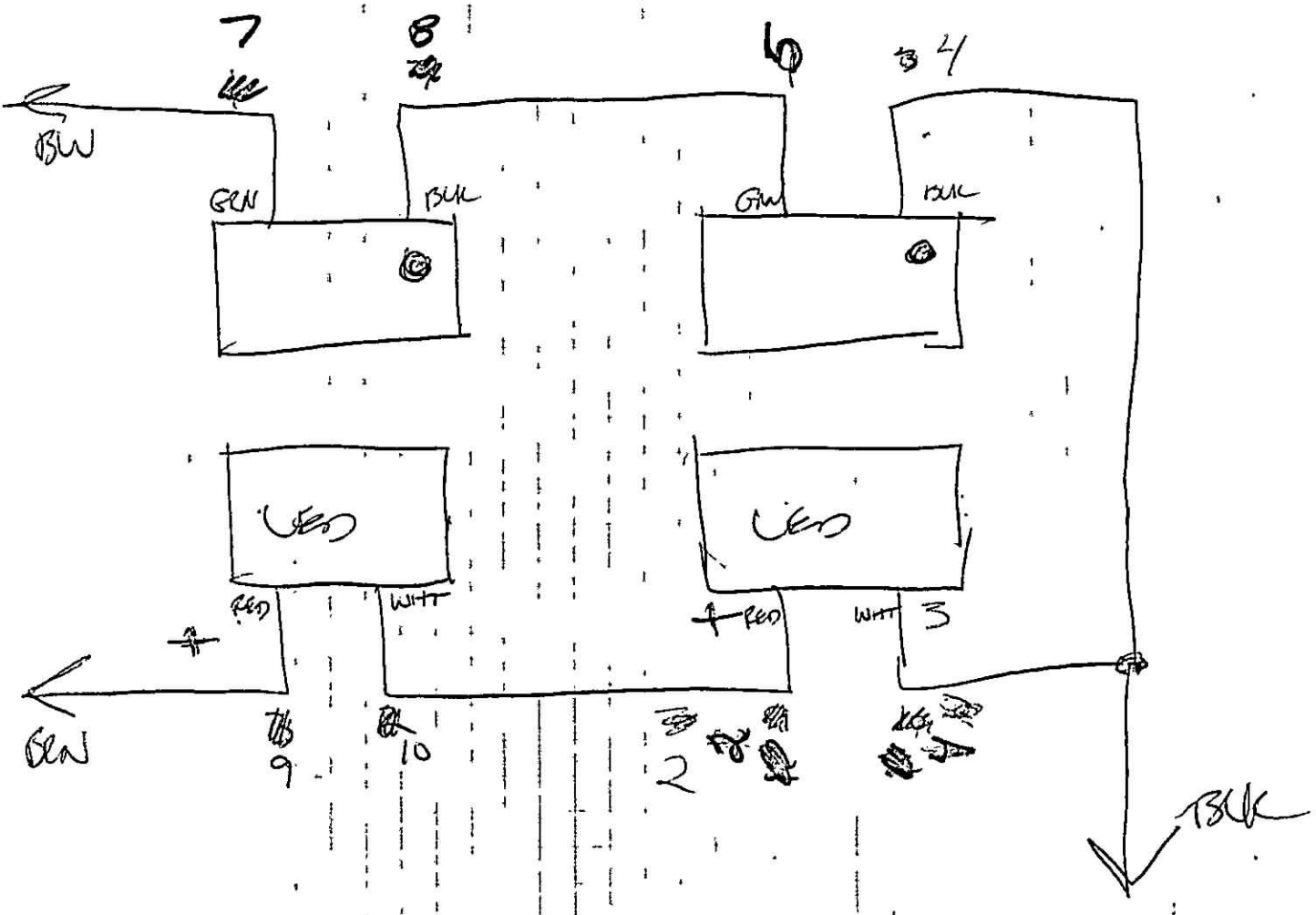
GIVES DC COMPONENT
WHICH FEEDS DIFF AMP #9
AND ADDS ONLY ± 5% VARIATION
V50 METER SHOWS PHASE ANGLE

(B) CONTROLS SPEED

FREQ TO
VOLTS CONVERTOR

4 - black 8 black
5 - green 7 green

LIGHT SENSOR ASSEMBLY

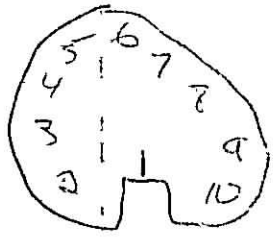


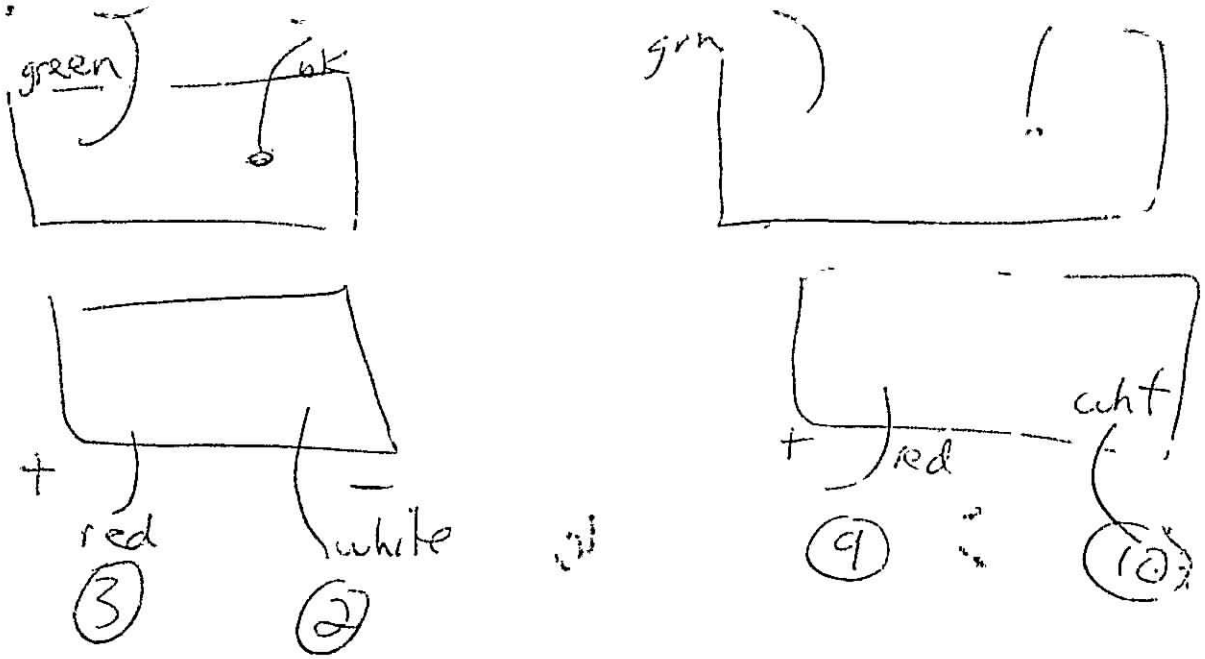
SOCKET WIRING

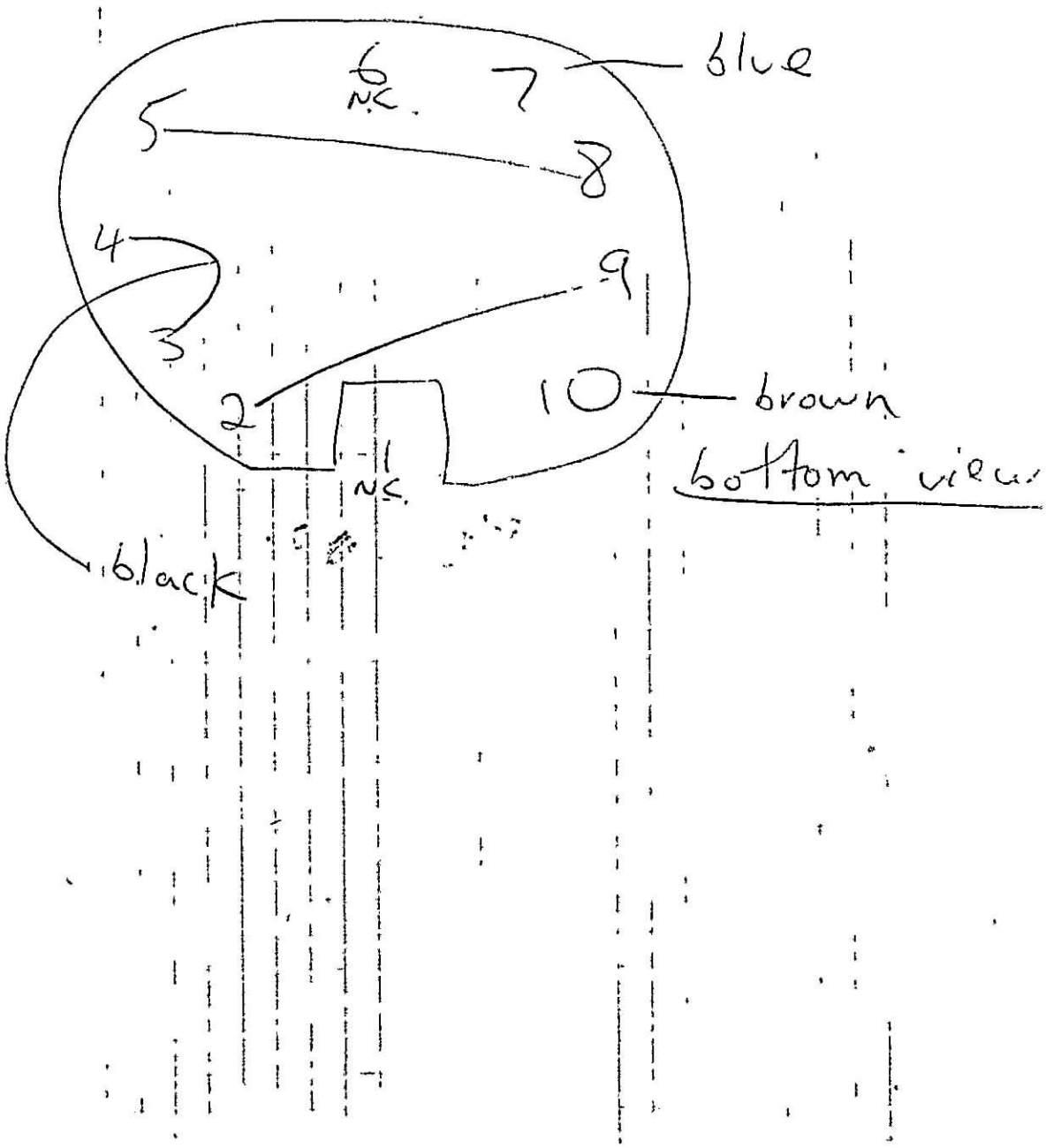
BRN — #10
BLU — #7
BLK — #3+4

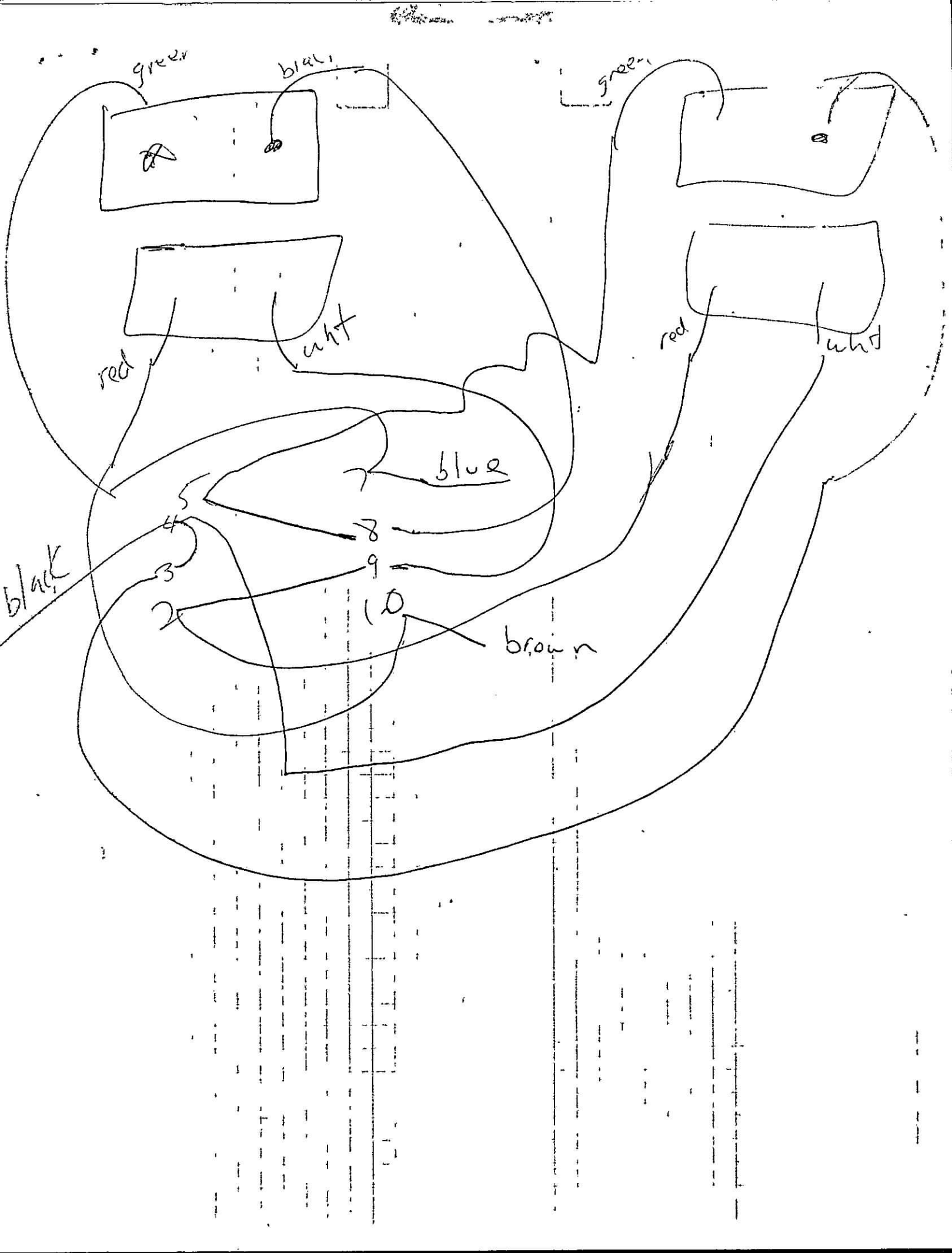
JUMPERS — 2+9
5+8

SEEN FROM BOTTOM OF SOCKET




green
wh
grn
+
red
3
−
white
2
+
red
9
wht
10


6
N.C.
7
blue
5
8
4
9
3
2
10
brown
1
N.C.
black
bottom view

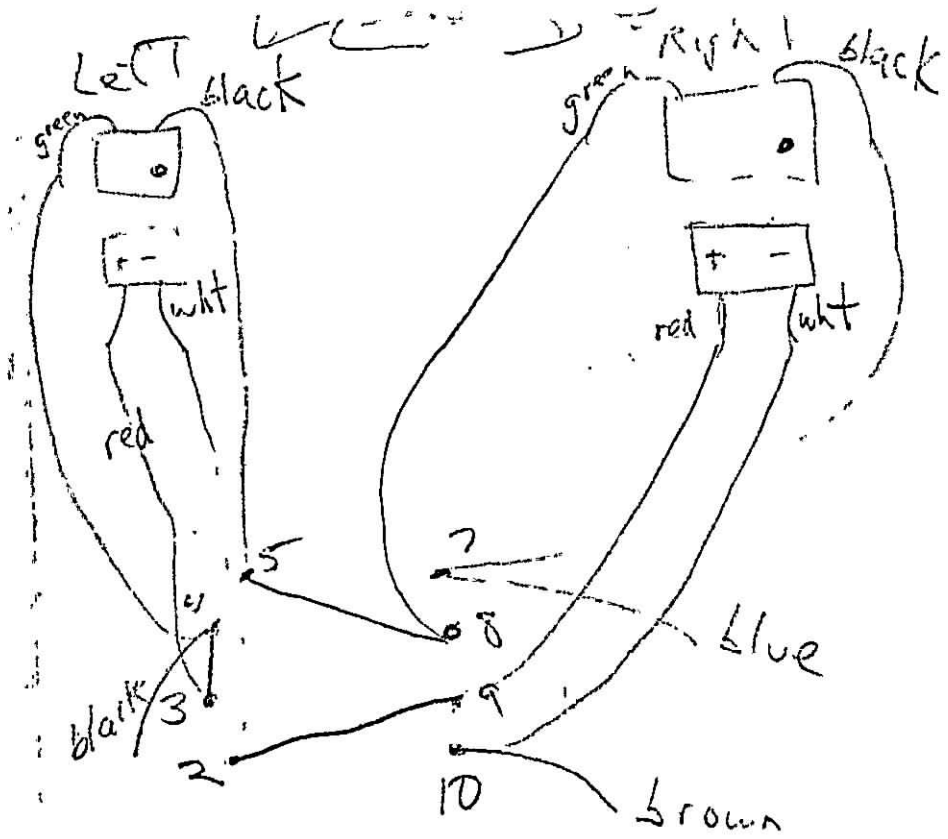

green
black
green
red
white
red
white
blue
5
4
8
3
9
black
2
10
brown

SENSOR TECHNOLOGY
21012 LASSEN ST
CHATSWORTH.

CONTACT: JACK COTTER
882-4100
ABOUT - STRT - 850A

(IS IT A PHOTO TRANSISTOR
(OR A PHOTO DARLINGTON
TRANSISTOR

PHOTO DARLINGTON
STRT 850D



~~6~~ 6
~~B~~ B
~~B~~ R
W

~~G~~ G
~~B~~ B
R
W

Bottom View

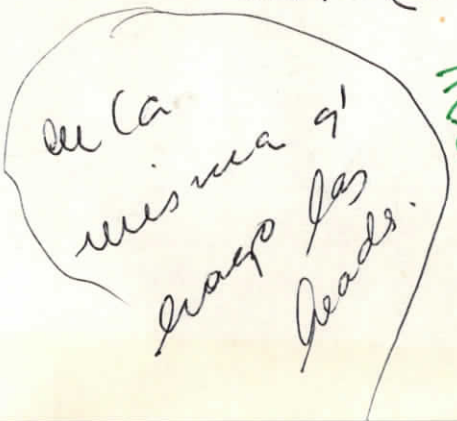
.79

307.
800
1107
800
307 =
200
507
300
807

Dick Dennee
462-2213.

.03M ±5% [test]

Set Range scale on C-D 0-0.1
Set Multiply C-R-L Dial By.
on .01 mf.
and the big Dial
on 3
under .031 mf For 1oz Pots
on record EQ.
and over .031 mf Fr Pre-amp
circuit board (.033 average



Tom Huller.
390-9251
Live Hess.

atlas
WIRE & CABLE CORP.
Whittier Phone: (213) 695-0686
Los Angeles Phone: (213) 723-2401
Orange Co. Phone: (714) 739-0202

FREQ COIL

2 wires # 24 guage

54" long.

WIND UP ALL THE WIRE

TAPE on top of the wire

THEN WIND 3 TURNS

OF # 30 wire AND

PUT TAPE ON TOP

OF THE wires

133 SO. VAN NORMAN RD., MONTEBELLO, CA 90640

atlas
WIRE & CABLE CORP.
Whittier Phone: (213) 695-0686
Los Angeles Phone: (213) 723-2401
Orange Co. Phone: (714) 739-0202

OUTPUT COIL —
4 wires #24 guage 5¼" long
WIND UP ALL THE WIRE
(MARK ONE END) WITH magic MARKER)
THE END WITH THE MARK
should have 4 turns less
wire on it. (INSTALL THIS END)
TO THE yellow wires on BIAS Chassis)

WRAP TAPE on TOP OF THE
WIRES WHEN Finished.

133 SO. VAN NORMAN RD., MONTEBELLO, CA 90640

-614-

8l 26

Q 1. 2N3703

pins - 2 - 3 - 4 flat side up

Q-3- 2N3703

pins 5. 6. 9. round side up

Q-4- 2N3704

pins 1. 4. 7 - facing up

Q - 2 - 2N3704

pin 5 + 3 - Resistor round side up

1 - Red Resistor long is 4.75K 1.F.

1 - Brown - Black Brown

2 - Orange white Brown

1 - Brown - Black Brown

1 - Yellow - Purple - Red + 4 Watt

6/4 8.26

2N3703-

Q1 - pins 2-3-4 flat side up

2N3703 2N3702

Q3 - pins 5, 6, 9 - round side up

2N3704

Q4 - pins 1, 4 7 facing up

2N3704

Q2 - round side up pins 5 & 3 Resistors

1 - Brown - Black - yellow

100K

2. Orange white Brown

390Ω

1 - Brown Black Brown

100Ω

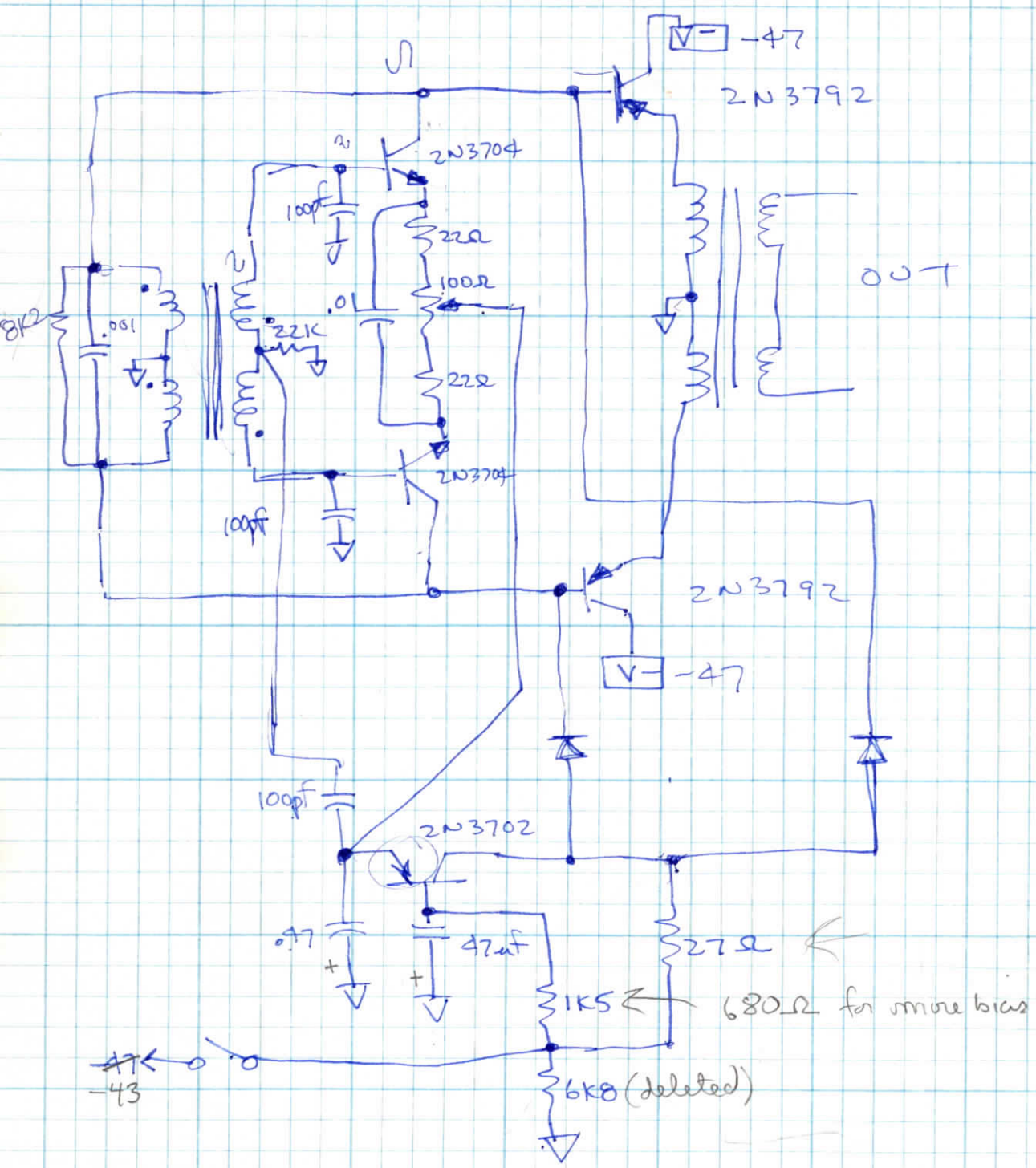
1 - yellow - purple - Red

4.7K

1. Red Resistor is 4.75K

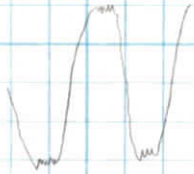
all 1/4 Watt 1F

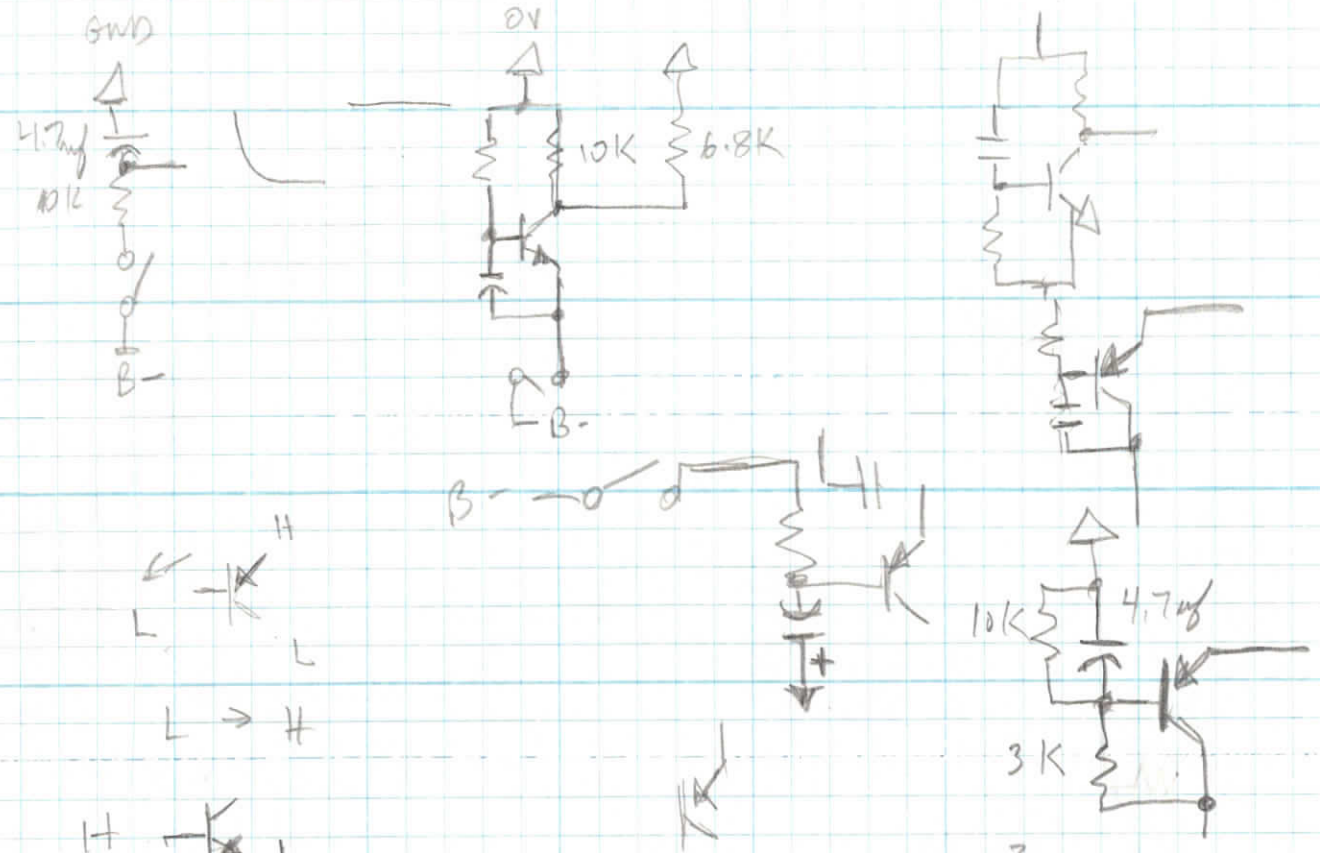
orange white black 39Ω



G. Liden 01-25-90

Stephen's BIAS OSC.



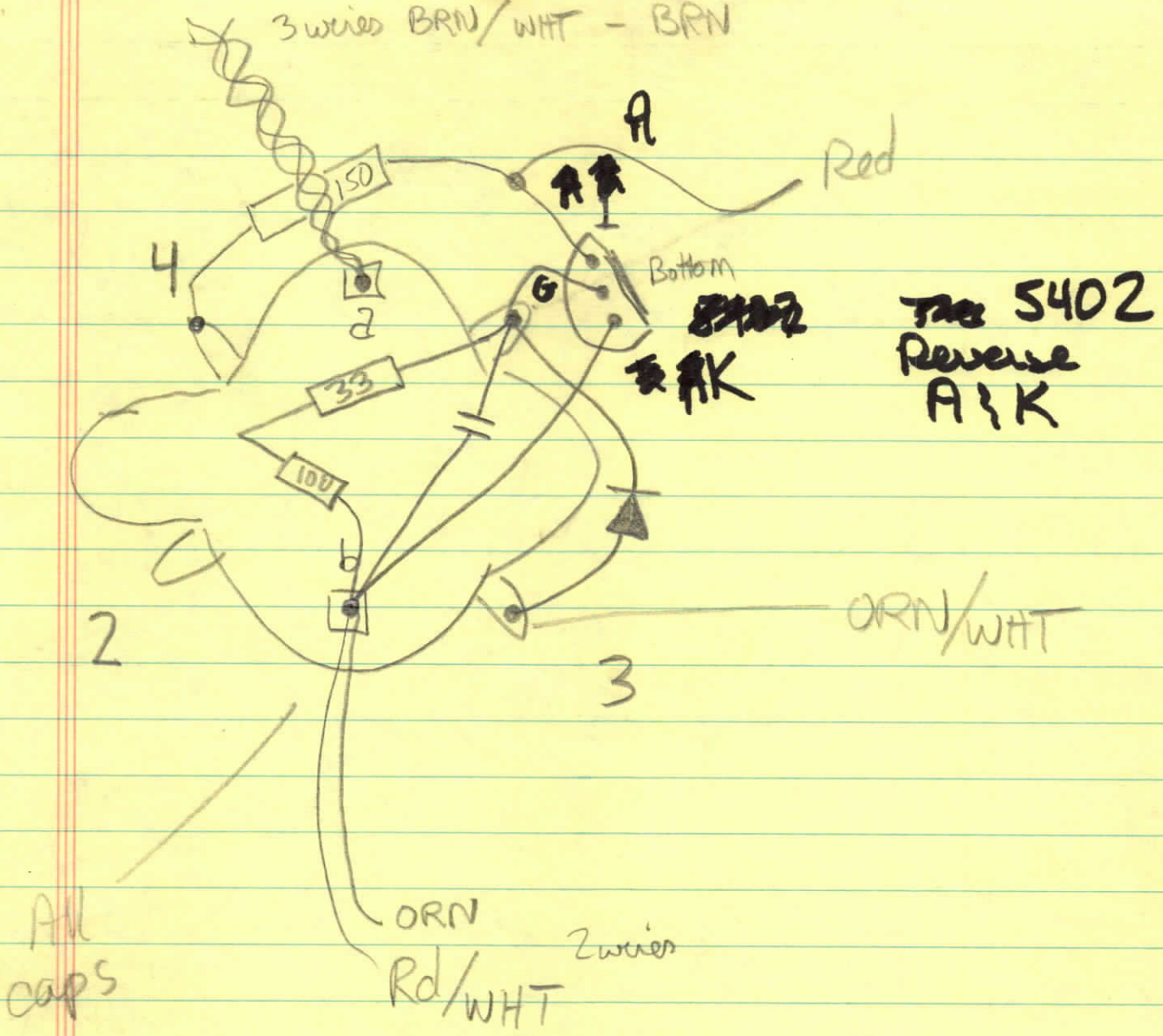


$4.7 \times 3 \quad -6 \quad 20^3$

$\frac{3}{13.1^{-3}}$

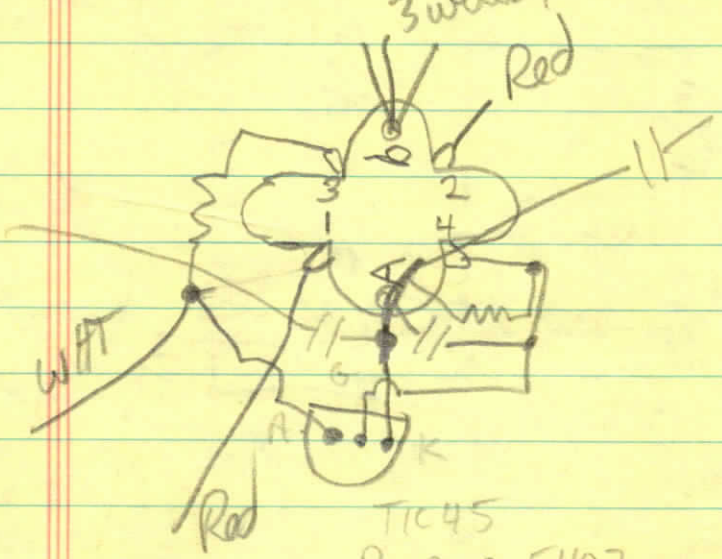
.013

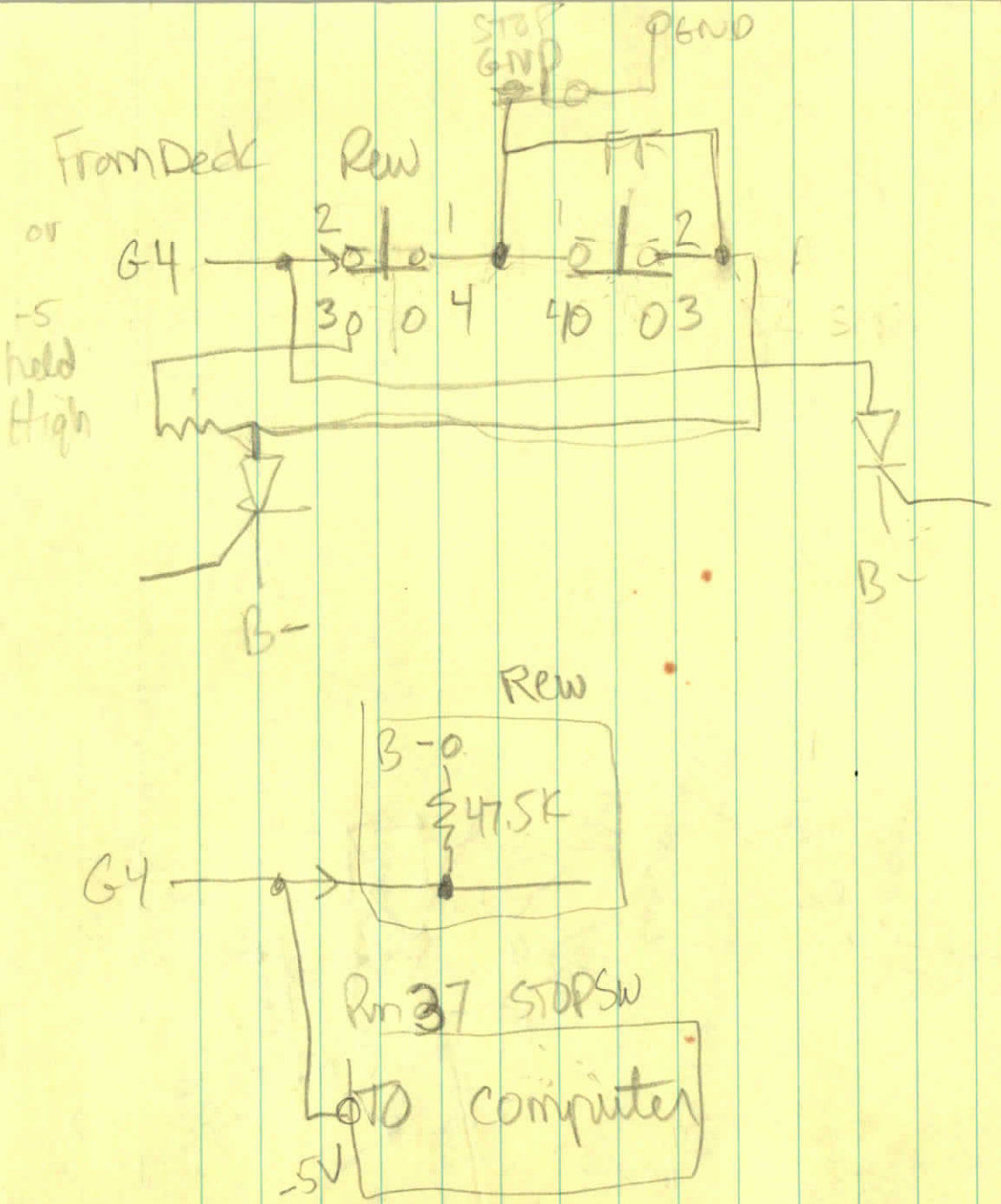
13 ms



The 5402
Reverse
A & K

Upside Down FF




STOP GND
GND
From Deck
or
-5 hold High
Rew
G4
2
1
1
2
3
0
0
4
4
0
0
3
B-
B-
Rew
B-
47.5K
G4
Rm 37 STOPSW
TO computer
-5V

J302

MALE
DUMMY

BRN	1	REWIND
RED	2	LOAD
ORN	3	PLAY
YEL	4	LOAD
GRN	5	STOP
BLU	6	STOP
VIO	7	REWIND
GRY	8	FWD
WH	9	FAST FWD
BK	10	RECORD
WH/BRN	11	-27V LIGHTS
" RED	12	-27 V VSO
" ORN	13	VSO
" YEL	14	VSO
" GRN	15	VSO GND
" BLU	16	COM/SPEED/GND
" VIO	17	HOT SPEED (NC)
" GRY	18	PRE
WH/BK/BRN	19	GND
WH/BK	20	COUNT DOWN OUT
WH/RED/ORN	21	SYNC AMP OUT (NC)
WH/BK/RED	22	∅ COMP IN
WH/RED/ORN	23	— PS?
WH/RED/YEL	24	— MPIN?
WH/RED/GRN	25	— DISPLAY STICK
WH/RED/BLU	26	— (NC)
WH/RED/VIO	27	— DISPLAY STICK
WH/RED/GRY	28	"A4"
WH/BK/GRN	29	"A5"
WH/ORN/BLK	30	"A6"
WH/BLK/BRN	31	"A7"
WH/BLK/BLU	32	"D0" FOOTSTORE LAMP
WH/BLK/VIO	33	"D1" PROG STORE LAMP
WH/ORG/YEL	34	"D2" PROG SEL LAMP
WH/ORG/GRN	35	"D3" START LAMP
WH/ORG/BLU	36	"B0"
WH/ORG/VIO	37	"B1"
WH/ORG/GRY	38	"B2"
WH/BLK/GRY	39	"B3" — DISPLAY STICK
	40	B4"
	41	"B5"
	42	"B6"
	43	"B7"
	44	"C0" H BUSS 1,2,3, FOOTSTORE
	45	"C1" H BUSS 4,5,6 PROG STORE
	46	"C2" H BUSS 7,8,9 PROG SEL
	47	"C3" H BUSS 0 START
	48	"C4" DUMP
	49	EXT REF
	50	LINE REF

4 jumper 6
7 jumper 8

PIN1 STOPSW

PLAY "Ø" LAMP RETURN
ON SHUTTLE CONTROLS AS WELL AS QII LIGHTS

VSO jumps

PRE

JUMPERS

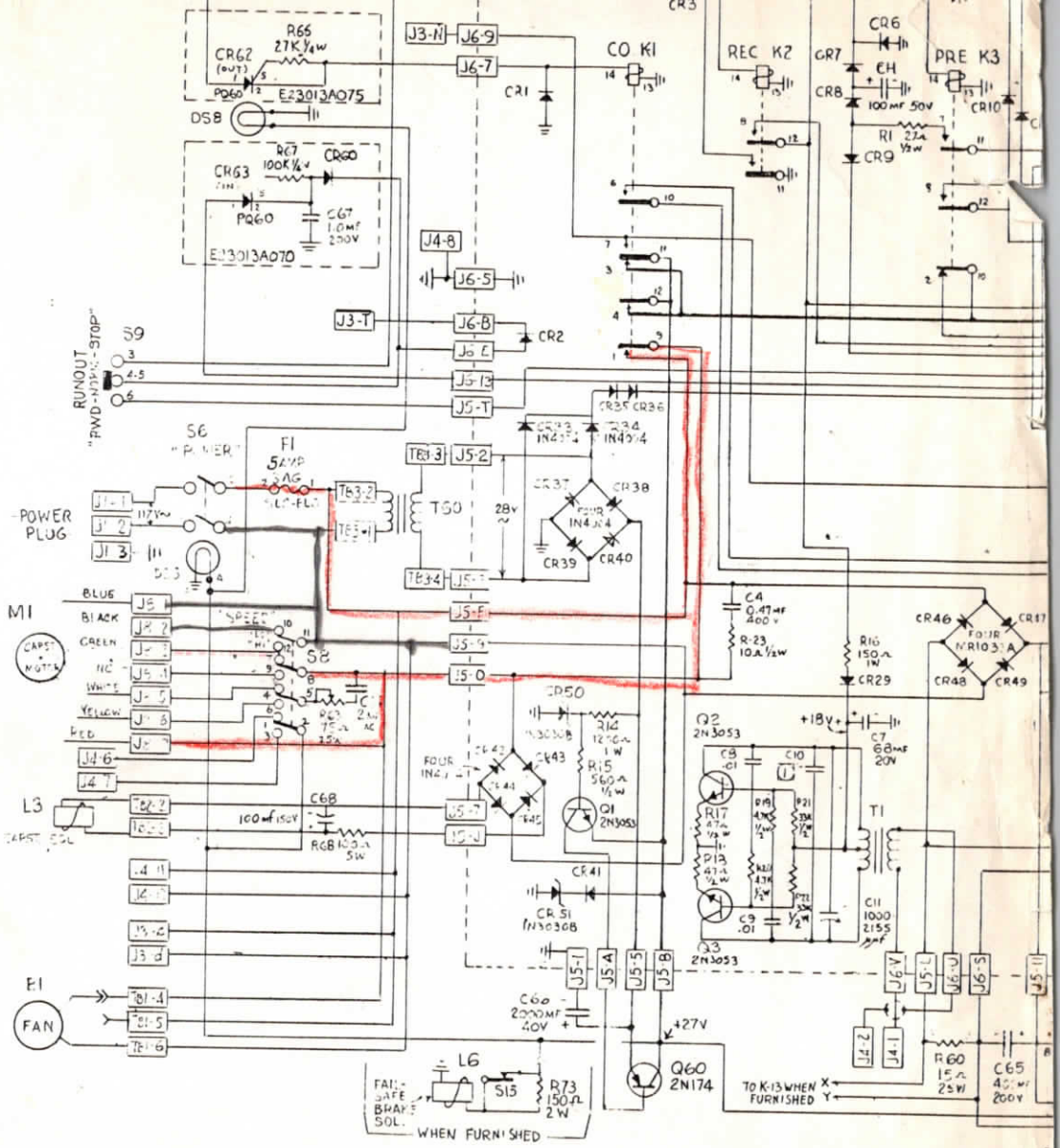
4 & 6
7 & 8
20 & 22
23 & 24
13 & 14

J8 WIRES
J8-1 Blue
2 Blk
3 green
4 x
5 white
6 yellow
7 red
8 x
J8-9 x

4 SPEED
Required connections to MOTOR
J8-1 AC Com
J8-2 AC Com
-3 AC Ø1 HOT
-4 N.C.
-5 AC Ø2 HOT
-6. N.C
7. AC Ø1 HOT

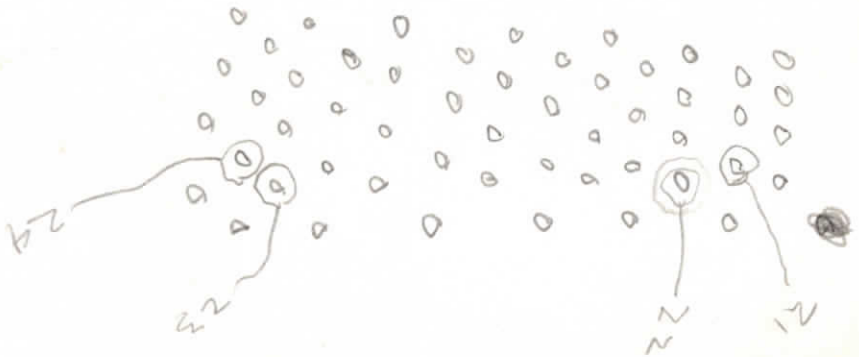
NOT
Scotch panels
& Ended

811?



Series A 3M/56 Tape
/642

TOP



?118

83/23 RCD 110

STEPHENS MODEL 214 VARIABLE SPEED OSCILLATOR

STEPHENS
ELECTRONICS, INC.
3513 PACIFIC AVENUE
BURBANK, CALIF. 91505
PHONE: (213) 842-5116

SPECIFICATIONS

GENERAL: The Stephens Model 214 Motor Power Supply is a solid state variable frequency power source, designed to control the speed of the capstan motor of a recorder or any similar system by varying its supply frequency.

INPUT: 117 V. A. C., 60 Hz., 2A.

OUTPUT: Modified 115 Volt RMS square wave, 150 Watts maximum.

FRONT PANEL: One six-position control switch; red pilot light; yellow indicator light; internal frequency oscillator controls for coarse and fine; four inch wide meter calibrated from 0-100 Hz.; meter calibration adjust; circuit breaker - all mounted on a standard 19" x 3-1/2" panel.

FRONT PANEL CONTROLS: 1. Six Position Switch; (a) "Emergency A. C." - 117 Volt fed directly to output in the event of failure (to eliminate down time.) (b) "Off." (c) "Sync" - Frequency controlled by external source. Output drops to zero volts if the source is less than 0 dbm. Maximum input +8 dbm. (d) "Auto - Frequency controlled by external source. Output switches to sync with power line frequency if external signal drops below 0 dbm. (e) "Line" - Unit operates in sync with power line frequency. (f) "Internal Oscillator" - Frequency variable between 40 and 80 Hz. and can also be controlled by supplying a 0 to -30 V. D. C. control voltage. 2. Coarse Tuning Control - varies frequency between 40 and 80 Hz. 3. Fine Tuning Control - permits vernier frequency control of $\pm$ 1 Hz.

ADJUSTMENTS: 1. Meter calibration is achieved by switching to "LINE" or "EMERGENCY." Meter can then be calibrated to power line frequency (60 Hz.) 2. Internal oscillator frequency range is adjusted by the trimmer located on the rear of the chassis; shifts frequency range higher or lower.

DIMENSIONS: Standard rack mounting, 3 - 1/2" x 19" x 7" deep.

WEIGHT: 7 Lbs.

FINISH: Light gray color #26440 per Fed. Std. 595.

OPTION: 60 Hz. standard in place of line sync.

WARNING: LOAD MUST BE COMPLETELY ISOLATED FROM AC POWER LINE.

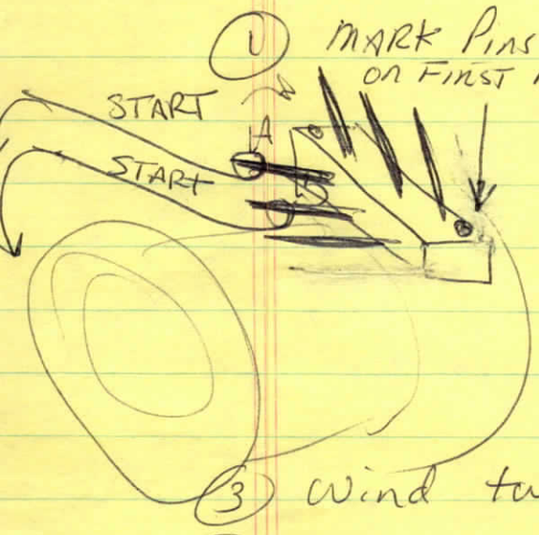
Two Types - 25 - 25 output ← 3B7-2616 Plug
AND 30 — ~~4~~ oscillator
19/44 Wire

Winding

Bias Coils

25/25 (4) pieces 56" long # ~~24~~ 60/44 guage magnet wire
30/3 ~~(2)~~ " 64" " # ~~24~~ 60/44 guage

1. Strip wire ends 1/8" on each - can be done with heat from iron.

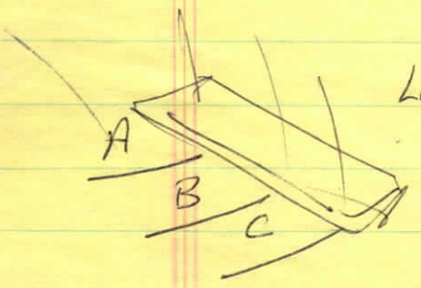


(1) MARK PINS ON FIRST PAIR

(2) START SECOND PAIR 180° FROM 1ST PAIR (1/2 TURN)

(3) wind two turns by hand

(4) Install coil on drill press jig an wind total of 25 turns



LEAD which starts on "A" terminates on Pin "B".

LEAD which starts on Pin "B" Terminates on Pin "C".

When taping windings overlap tape 1/2 turn.
On ferrite cores use matched pairs.
Mark BOBBIN as to coil ratio before inserting into core.

3D3 A100 Core

30 turns (2) wire same as other coil -

Tape and Wind 3 turns (2) wires (From opposite terminal) and Terminate the same as before.

Winding Max driver (small Bobbin)

3D9

#30 guage - wind flush to edge of Bobbin leaving room for taping

American Brass and Copper

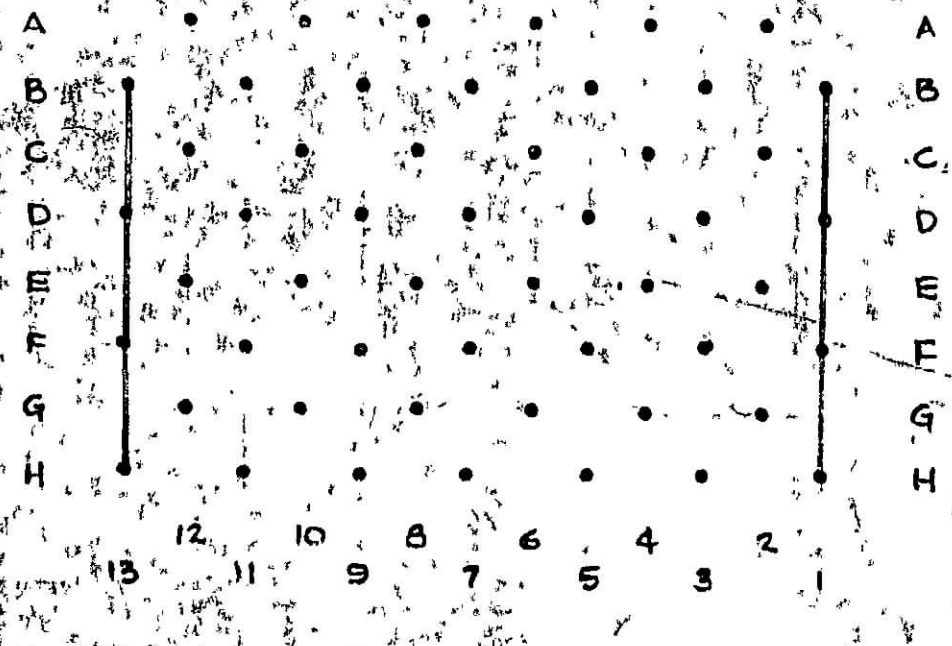
#440 Line Comp Connector

AMPHENOL-220-IN052

Grounds.

13 - B - D - F - H

1 - B - D - F - H.



AMPHENOL 220-IN052

	440
SCALE:	
DATE:	12/11/73

White + Blue = 12 - A - C - E - G

White + Orange = 11 - B - D - F - H

White + Brown = 10 - A - C - E - G

Yellow = 9 - B - D - F - H

White = 8 - A - C - E - G

Green = 7 - D

Blue = 7 - F

Red = 7 - H

Grey = 6 - A

Violet = 6 - C

White + Grey = 6 - E

White + Violet = 6 - G

Red + White = 5 - B - D - F - H

White + Red = 4 - A - C - E - G

Orange = 3 - F

Brown = 3 - H

White + Green = 2 - A - C - E - G

All Wires 5" long

V. strips

1295 67th Street
Oakland, Calif. 94623
(415) 658-7212
Greater Bay Area: Enterprise 1-0780

2131 So. Garfield Ave.
Los Angeles, Calif. 90040
(213) 726-3131

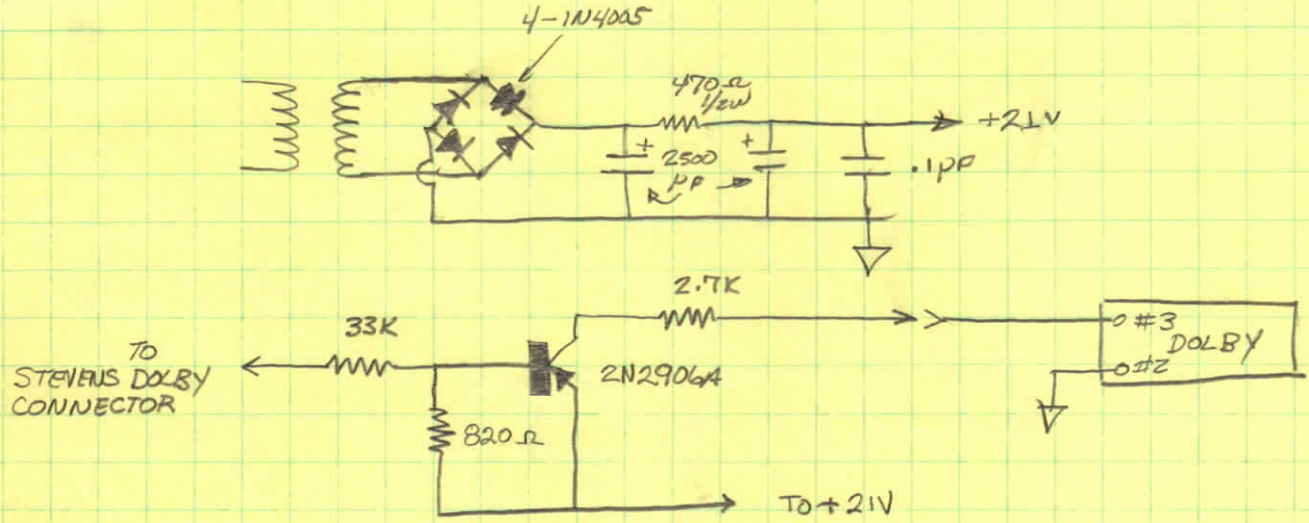
ALUMINUM
BRONZES
AMPCO METALS
PLASTICS
TUBE FITTINGS

OFHC COPPER
STAINLESS
RWMA ALLOY
MICARTA
FASTENERS

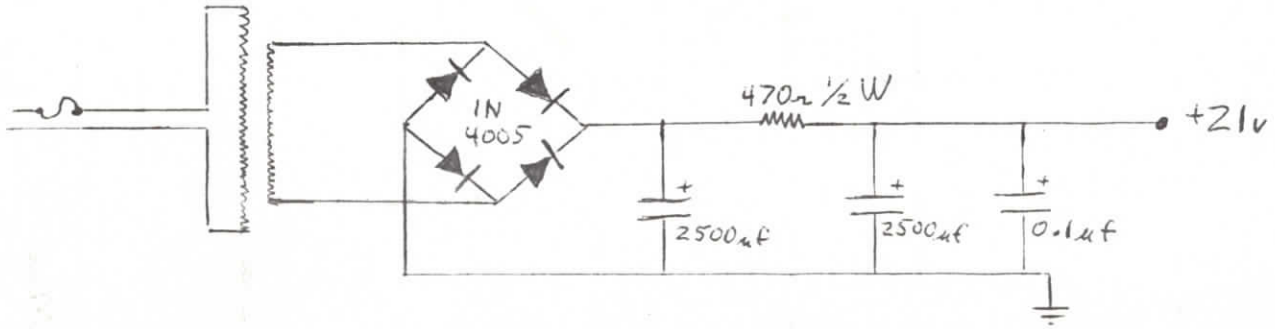
PRECISION SAWING, SLITTING,

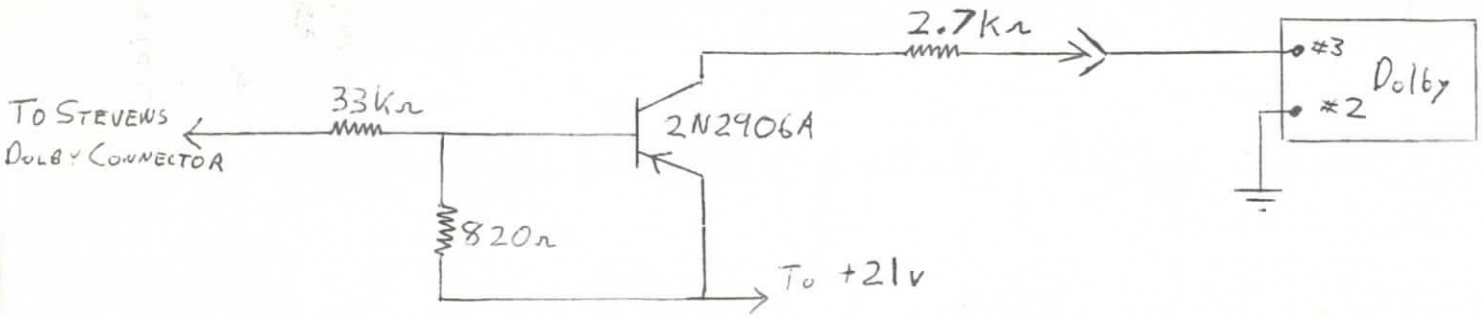
PRINTED ON NO. 1000H CLEARPRINT

STEVENS Dolby SWITCHING UNIT

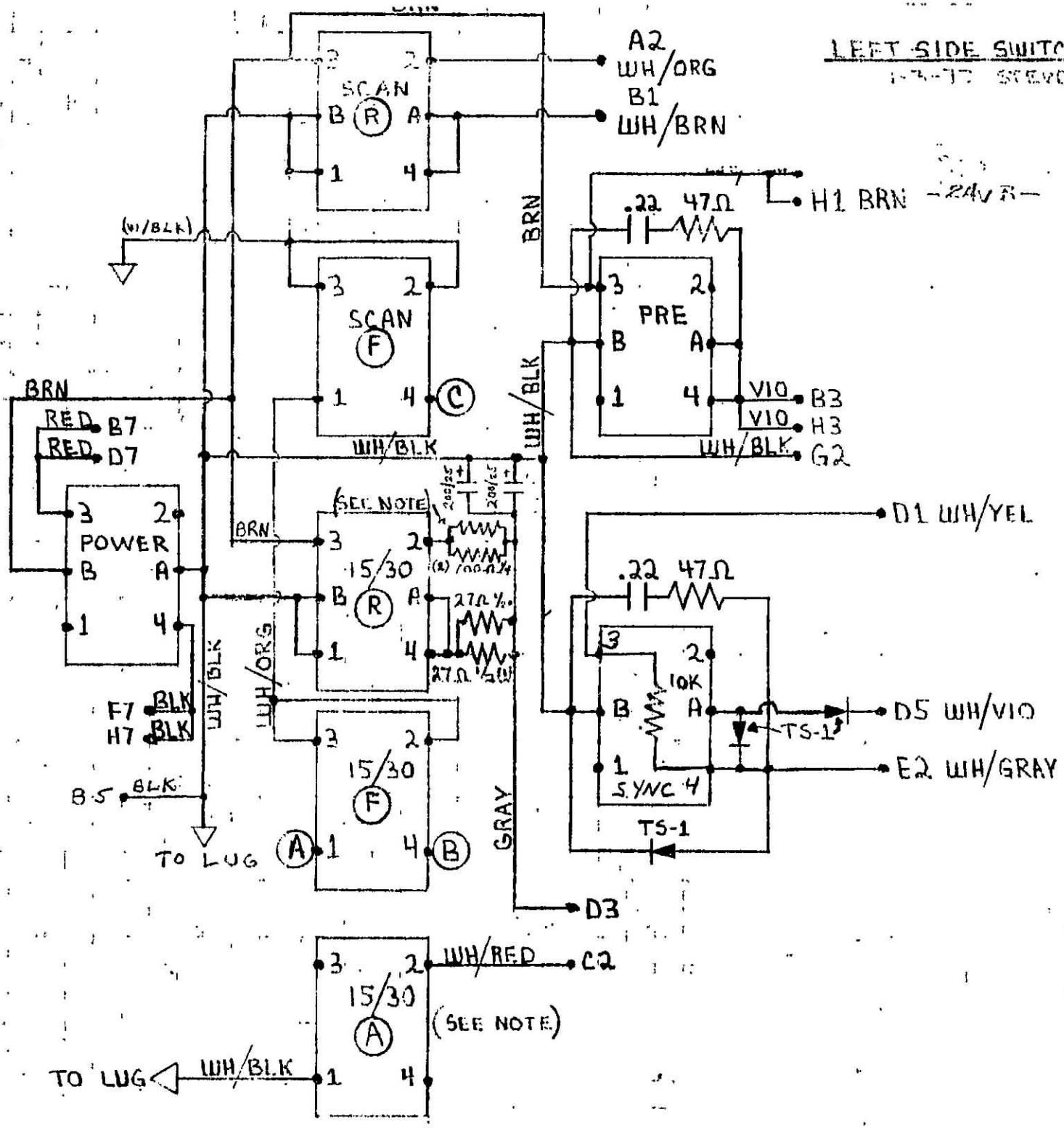


Steven's Dolby Switching Unit





LEFT SIDE SWITCH UNIT

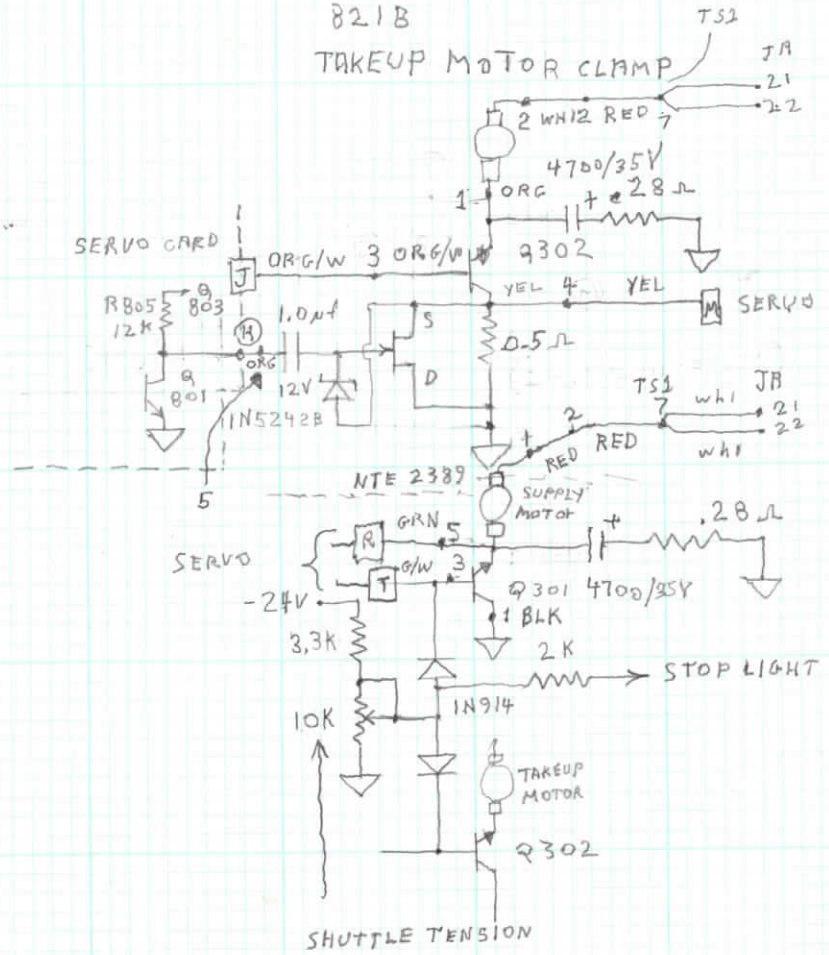


K1 Master Record, Pin 6
Turns on Bias (Bias Control) thru
27Ω (or Land) with 390Ω in Parallel
to Base of 2N3702 (Q906) - Had
-8V DC on it

2 out of 3 chassis Hang Slow
Bias Shut-off

1) How Do We Slow Down Record Delay
Circuit

2) How Do We ~~Slow~~ Kill Bias Osc.
Quicker → 1½-2 secs.

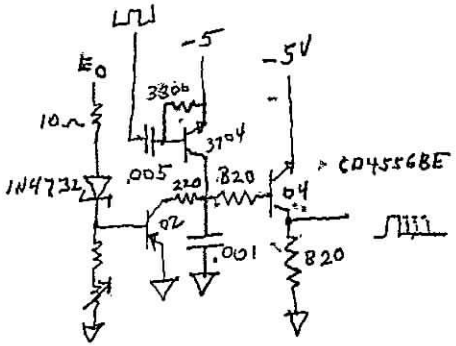

821B
TAKEUP MOTOR CLAMP
TS2
J8
21
22
2 WH12 RED 7
4700/35V
1 ORG
28Ω
SERVO CARD
J
ORG/W 3 ORG/W
Q302
YEL 4 YEL
M
SERVO
RB05
12K
Q803
1.0uf
S
0.5Ω
ORG
Q801
12V
D
IN5242B
TS1
7
WHI
JB
21
22
2
RED
RED
WHI
NTE 2389
SUPPLY MOTOR
5
GRN 5
R
SERVO
G/W 3
T
.28Ω
Q301 4700/35V
-24V
1 BLK
3.3K
2K
STOP LIGHT
10K
IN914
TAKEUP MOTOR
Q302
SHUTTLE TENSION
D
G
S

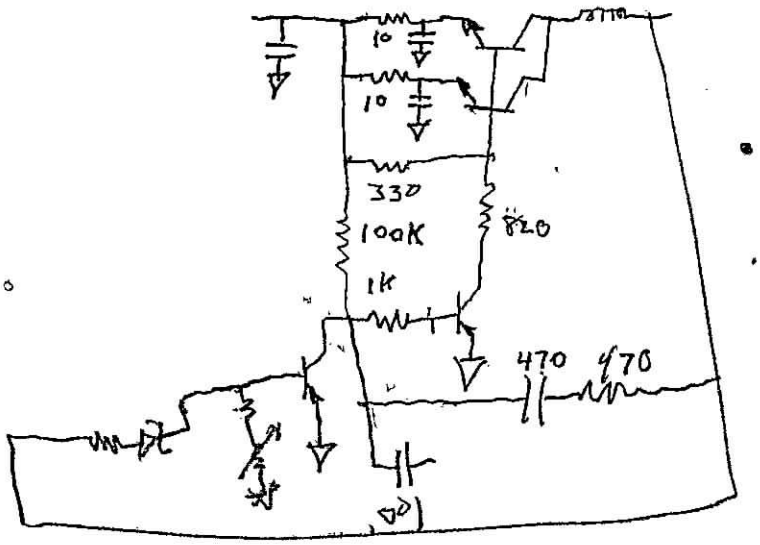
KYNCHIA.NET JUSTDIAGS.COM

63 MS.

B C E

3800 vfo 350 V.





Z/G 125 B

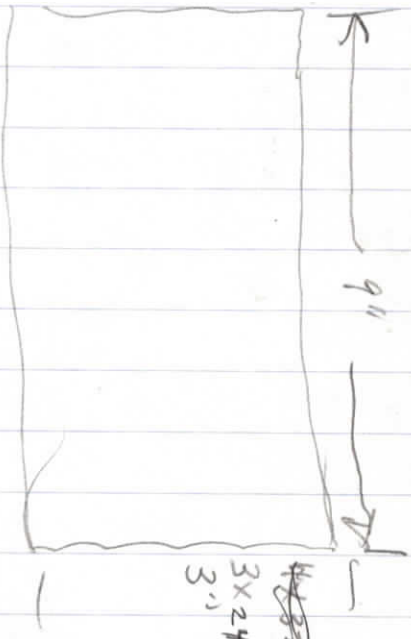
C 163 B

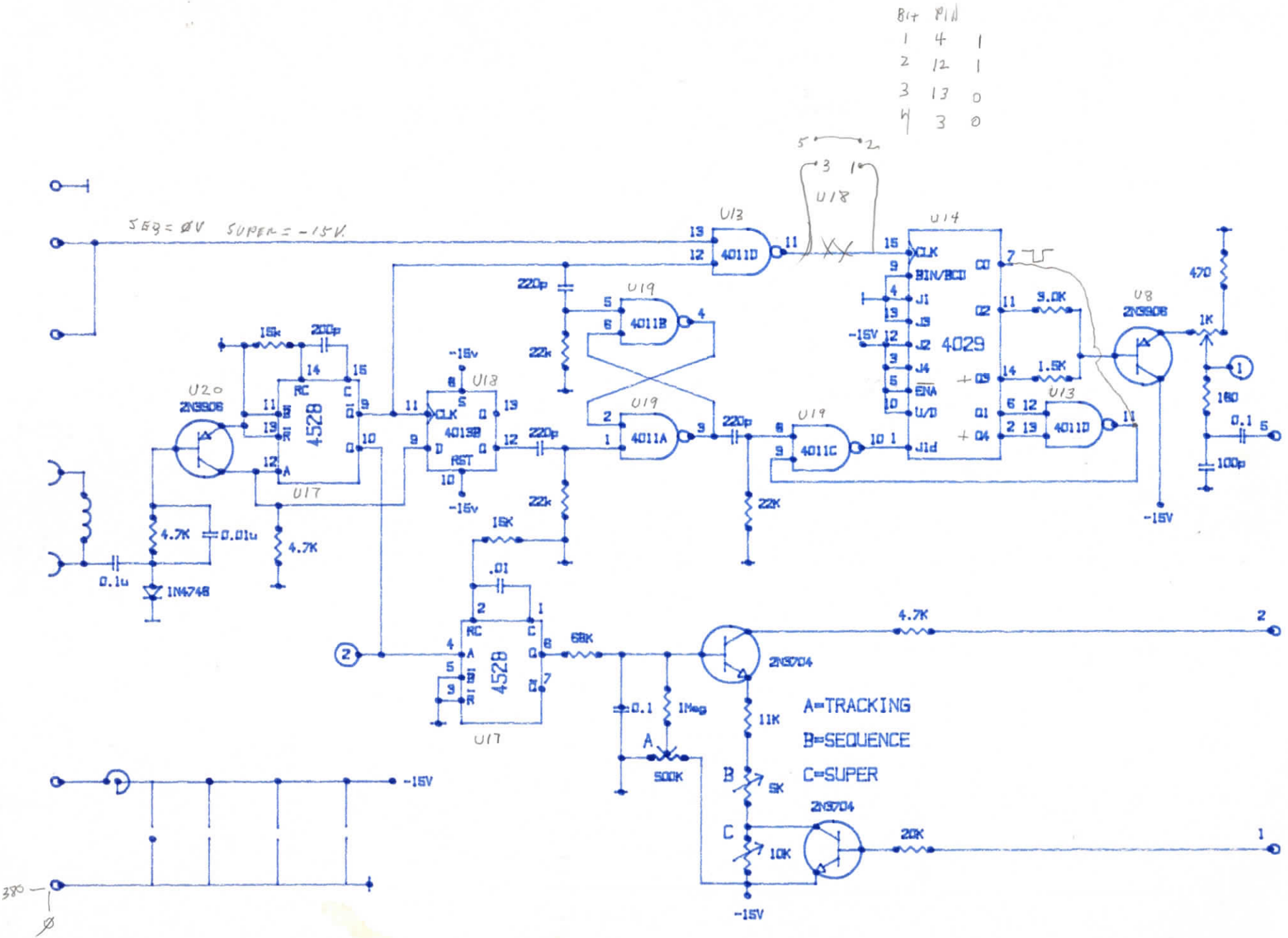
G 131 B

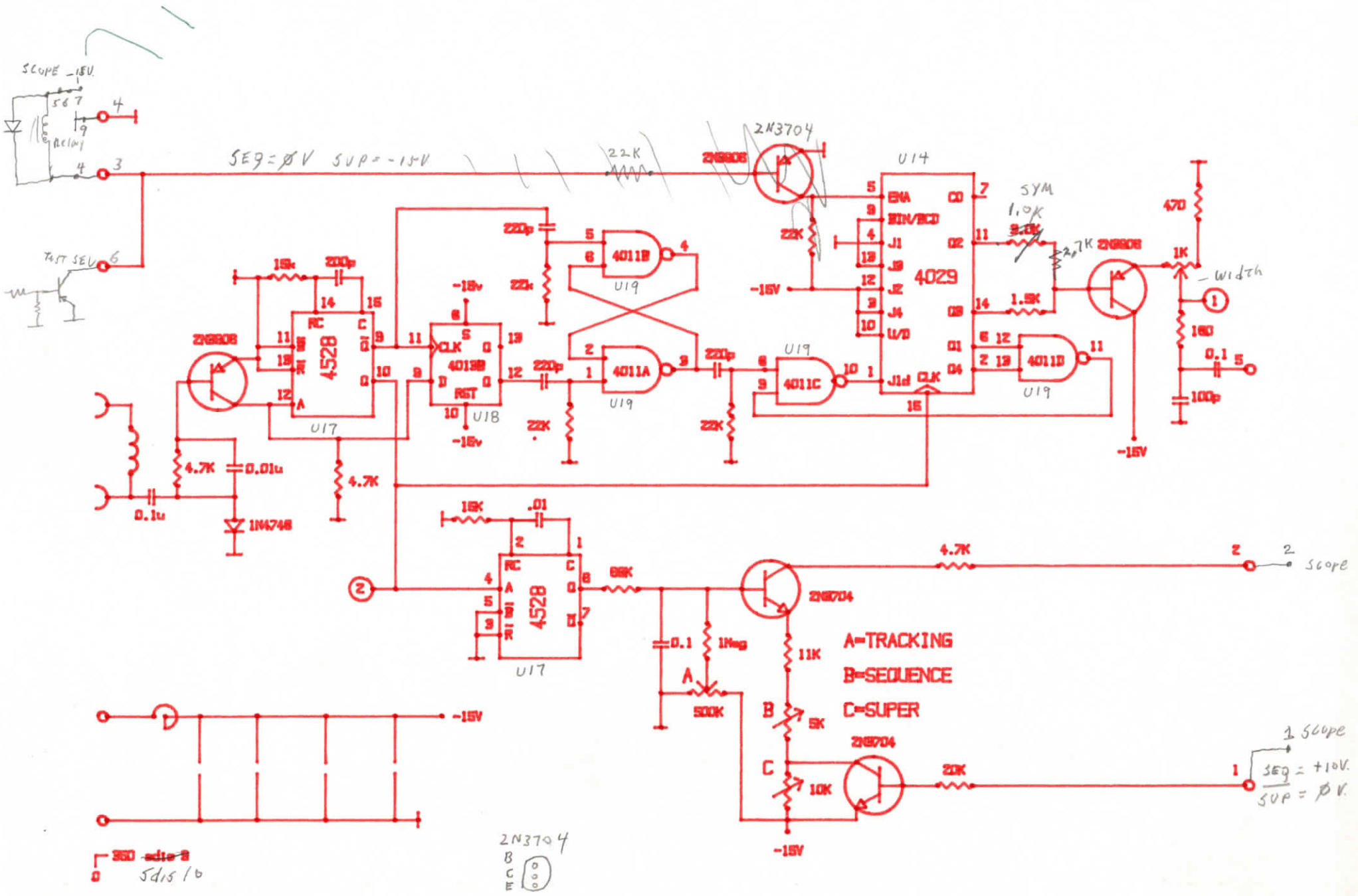
5328Z

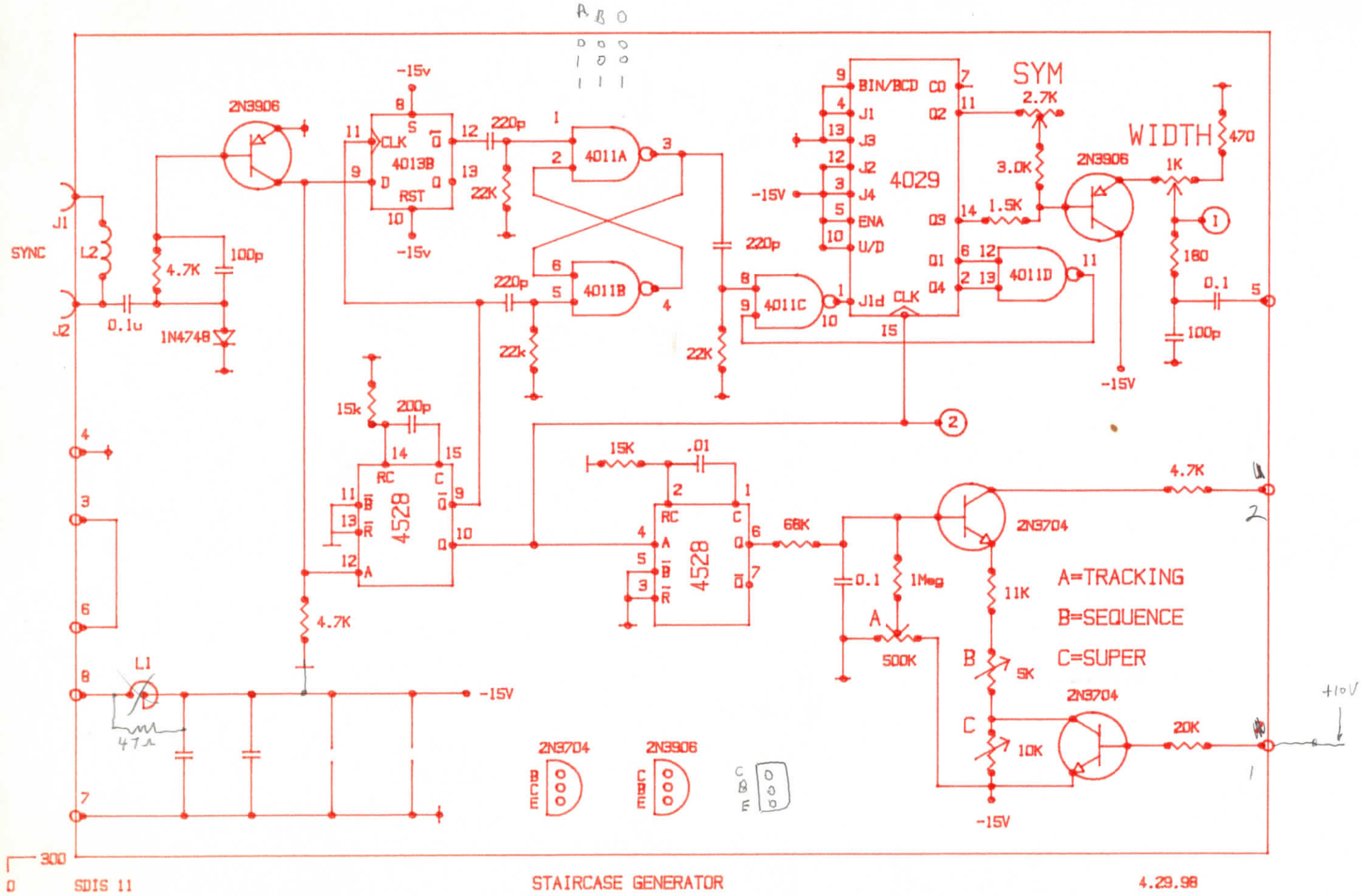
44.50

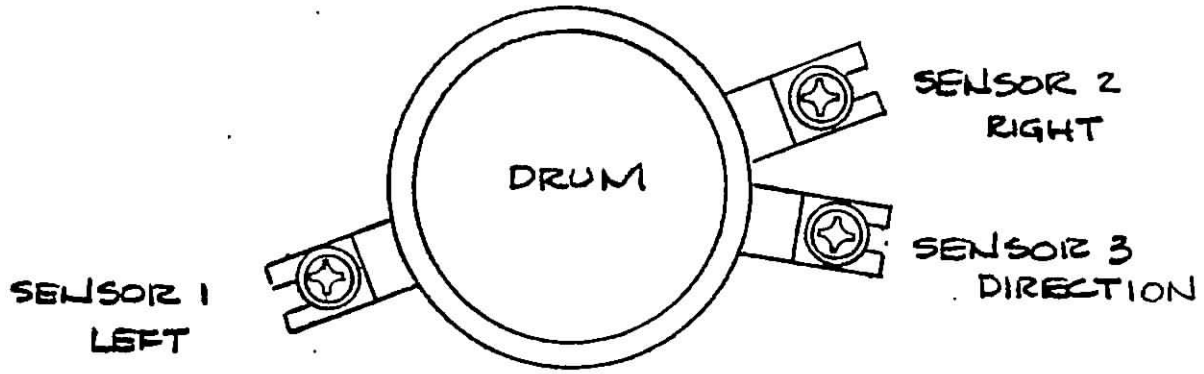
Santa Clarita Bearing, Inc.
25520 W. Ave. Stanford Unit 307 • Santa Clarita, CA 91355
(805) 295-0760 • (818) 789-5237 • Fax: (805) 295-0905

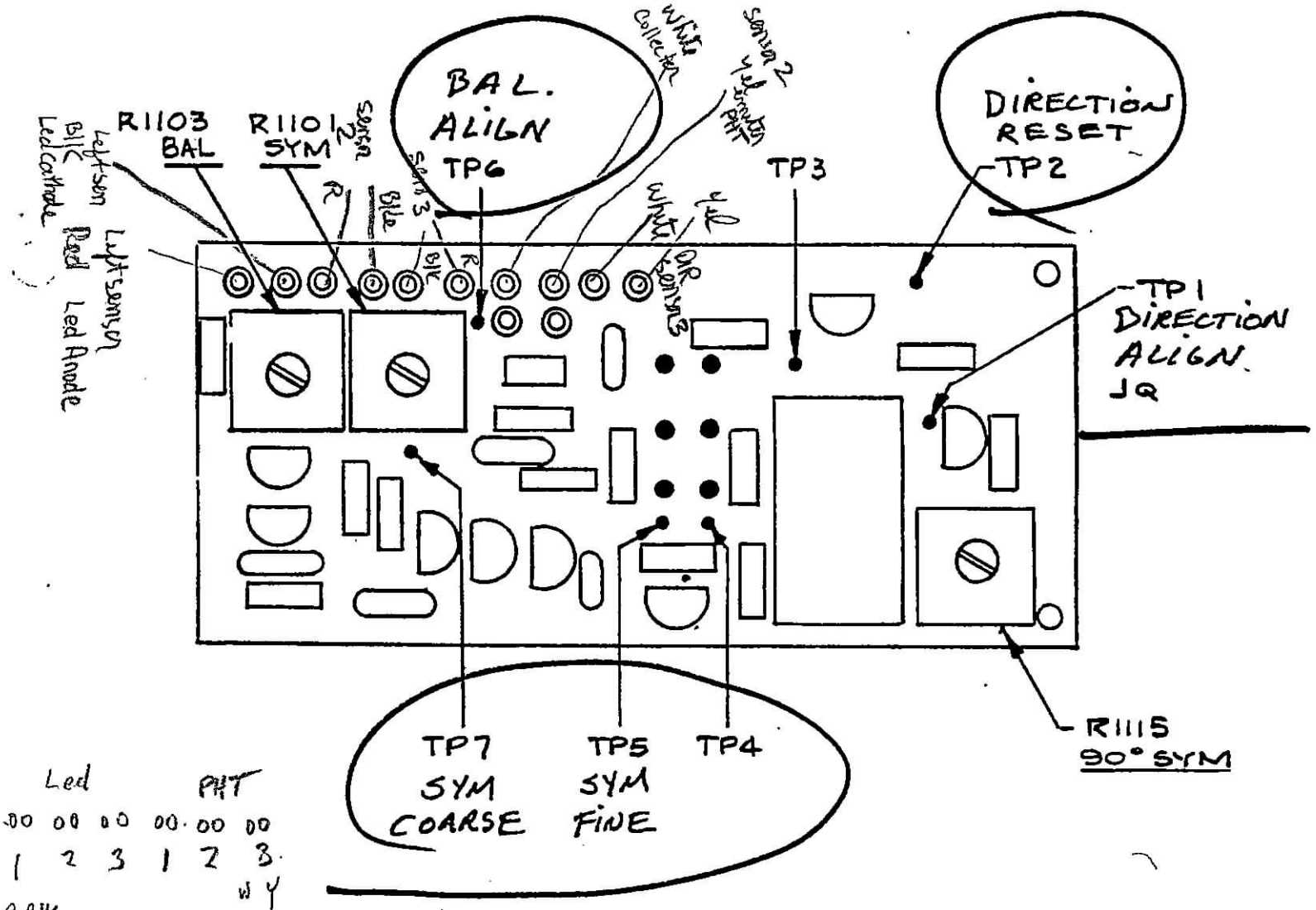



Bit Pin
1 4 1
2 12 1
3 13 0
4 3 0
SEQ = ØV SUPER = -15V.
U13
4011D
U18
U14
4029
CLK
BIN/BCD
J1
J3
J2
J4
ENA
U/D
Jid
CO
O2
O1
O4
U19
4011B
4011A
4011C
U8
2N5906
U20
2N5906
U17
4528
U18
4013B
CLK
RST
220p
22K
15K
200p
4.7K
0.01u
0.1u
1N4748
.01
68K
0.1
1Meg
500K
11K
5K
10K
20K
2N5704
9.0K
1.5K
470
1K
180
100p
0.1
-15V
A=TRACKING
B=SEQUENCE
C=SUPER
380
SDIS 9


SCOPE -15V.
RELAY
SEQ=ØV SUP=-15V
22K
2N3704
U14
4029
SYM
1.0K
2.7K
470
1K
WIDTH
160
0.1
100p
TEST SEQ
2N6606
15K
200p
4528
U17
4011B
U19
4011A
4011C
4011D
4013B
U18
220p
22K
-15v
4.7K
0.01u
0.1u
1N4746
.01
68K
2N6704
0.1
1Meg
500K
11K
5K
10K
A=TRACKING
B=SEQUENCE
C=SUPER
scope
SEQ = +10V.
SUP = Ø V.
2N3704
B
C
E


SYNC
J1
J2
L2
0.1u
4.7K
100p
1N4748
2N3906
-15v
4013B
CLK
RST
220p
22K
4011A
4011B
22k
4011C
4029
BIN/BCD
J1
J3
J2
J4
ENA
U/D
J1d
CLK
CO
Q2
Q3
Q1
Q4
SYM
2.7K
3.0K
1.5K
WIDTH
1K
470
180
0.1
100p
4011D
15k
200p
RC
4528
15K
.01
68K
4.7K
2N3704
0.1
1Meg
A
500K
11K
B
5K
C
10K
20K
A=TRACKING
B=SEQUENCE
C=SUPER
L1
47n
+10V
2N3704
2N3906
300
SDIS 11
STAIRCASE GENERATOR
4.29.98



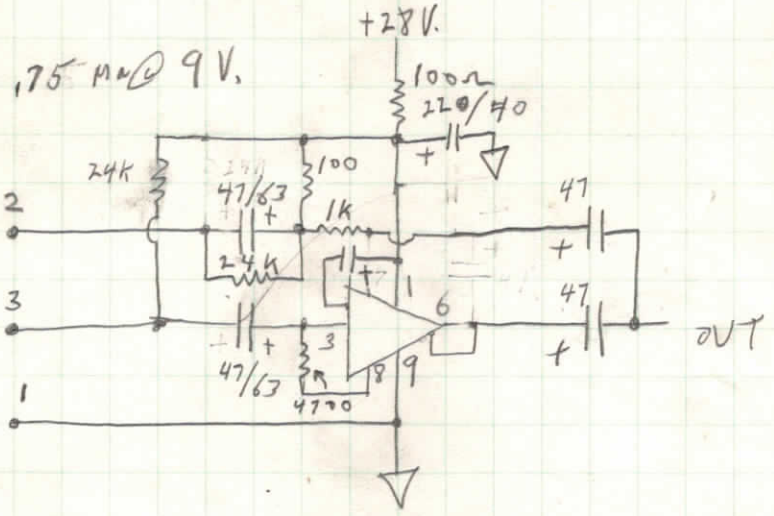


Led PHT

00 00 00 00 00 00

1 2 3 1 2 3

R BLK W Y



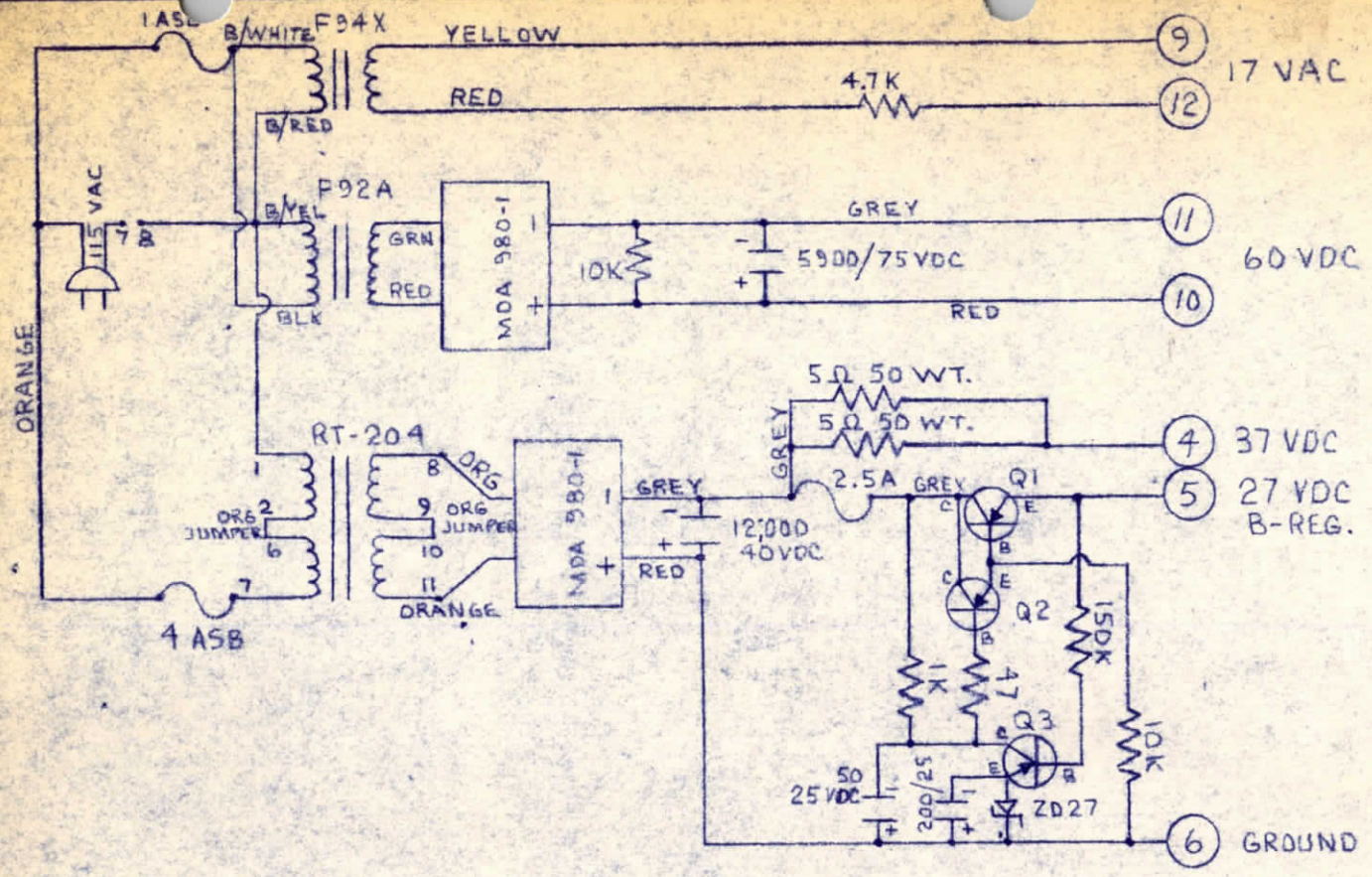
#5-11

— RD
= BLK
— YEL

6.2K @ 48V.

213-692-6556
DIANE MORRISEY
P.O. BOX 4247
4067

OUT OF BODY
SANTA MONICA CITY COLLAGE
PARA PSYCOLOGY PART I



REFERENCE SYMBOLS

Q3	TR-05
Q2	TR-02
Q1	TR-02

NOTES: UNLESS OTHERWISE SPECIFIED
1. ALL RESISTORS ARE ¼ (QUARTER) WATT
2. ALL RESISTOR VALUES ARE IN OHMS
3. ALL CAPACITOR VALUES ARE IN MICRO-FARADS

POWER SUPPLY
8 AND 16 TRK.

SCALE: ——— APPROVED BY: DRAWN BY STEVE

DATE: 3-14-77 REVISED

DRAWING NUMBER

25 - 500

3 374-3030-001 61.25/thous.

10 374-3100-001 136.15/

3 374-4035-002 109.20

10 374-4105-002 273.20

61-50001-022 25.40/thous.

$1000.00 BILL KAUFMANN

	3000 series NX 10.70 +29.15		4000 series NX 23.43 +38.91	
3	61.25		109.2	
4	71.95	74.35	132.63	133.30
5	82.65	85.20	156.06	159.50
6	93.35	98.30	179.49	185.70
7	104.05	107.05		
8	114.75	126.75	202.92	207.60
9	125.45	131.70	226.35	229.40
10	136.15	136.15	273.21	251.25
	789.60		1279.86	
11	~~116.85~~		296.64	273.20
	148.65		2069.46	305.95

51

104

5200 =

2600 =

50 - pcs. - 103.50

5200 = 132.08

UNIT price WITH CONTACT 3.3908

25 pcs. = 51.75

CRIMP TOOL # 31-118-00310 — 97.00

EXTRACTION TOOL # 22-118-00060 — 8.50

Bill KAUFMAN —
Wicked Wanda ANDERS —

MALCO
A Microdot Company

MALCO/Montgomeryville
Montgomeryville, Pa. 18936
(215) ~~628-9800~~ 699-5373 —
BACK PANELS, TERMINALS

MALCO Mandex
2614 W. 48th Street
Chicago, Ill. 60632
(312) 254-4200
TERMINAL STRIPS AND HARDWARE ON PHENOLICS

MALCO/South Pasadena
220 Pasadena Ave.
South Pasadena, Ca. 91030
(213) 682-3351
RECTANGULAR, COAX, CIRCULAR CONNECTORS AND CABLE PRODUCTS

Stephens Electronics Inc.
3513 Pacific Ave.
Burbank, Ca. 91505

Attn:Mr.John F. Stephens

Date: Sept.21,1978

Literature Sent: U-Mate brochure,Circular catalog
U-Mate samples

Jack Berman Co.
649-6111

Thank you for your interest in MALCO and the MALCO product line. The literature you requested is enclosed.

Should you need additional or applications assistance, please contact your local MALCO representative (list enclosed) or the applicable MALCO facility above.

We look forward to serving you.

AVNET — 213-558-2345
714-754-6111

MALCO, A Microdot Company

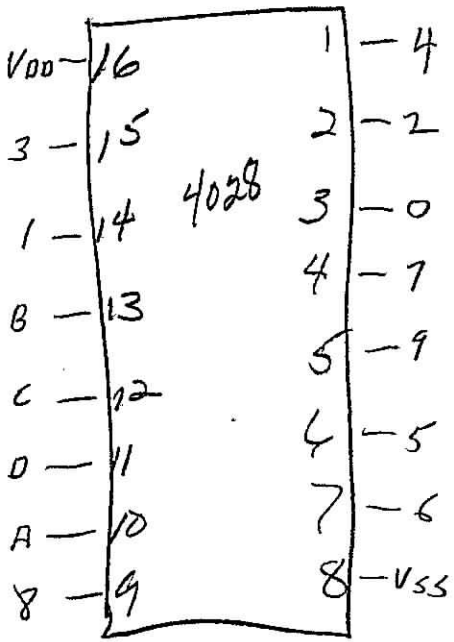
RECEIVED SEP 25 1978

Garry

Form No. 12-6

TLI — ELECTRONIC STORE

SEND — TIS 73

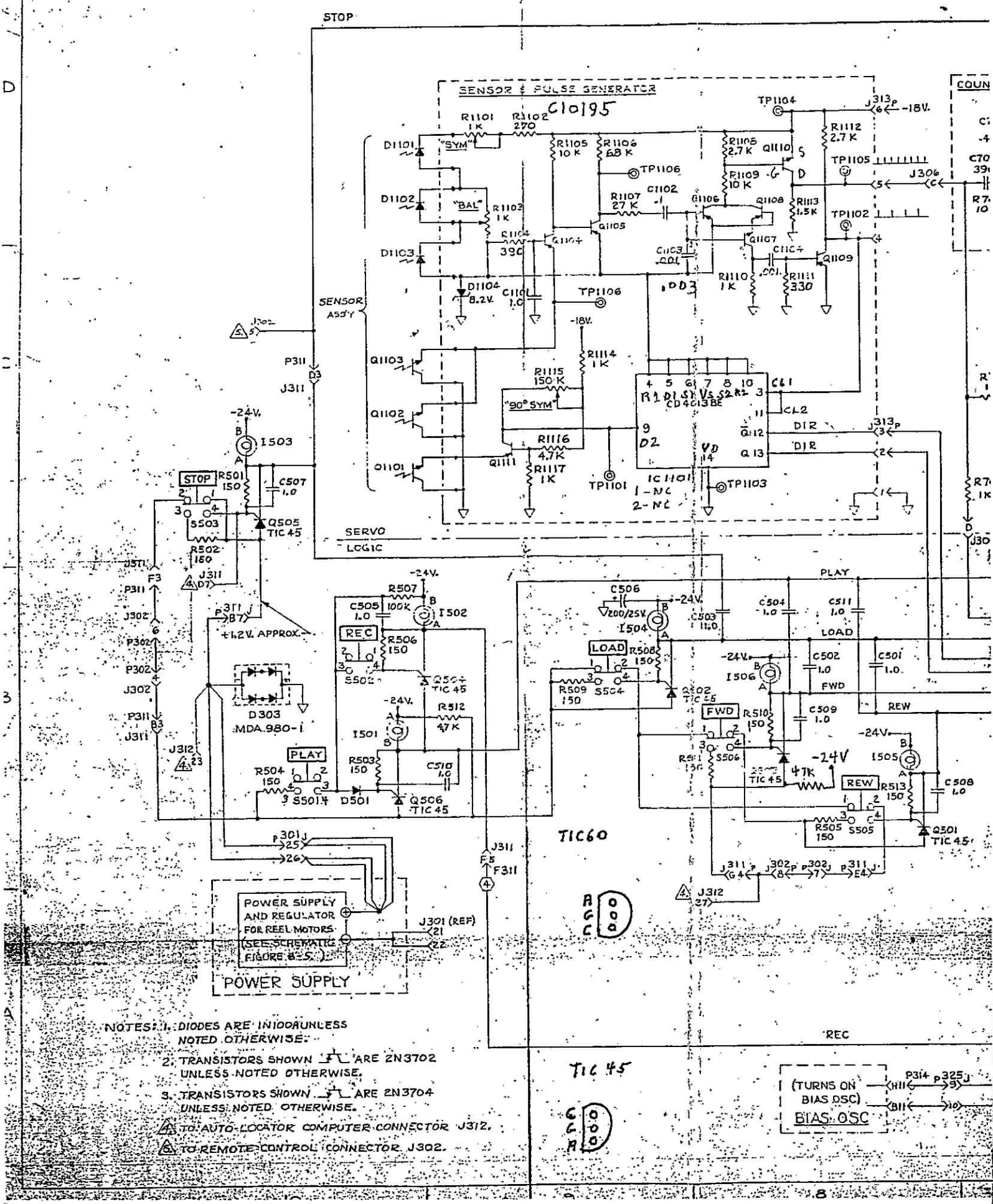


SWITCHER — 25 PIN CONNECTOR

TIE TO MAIN CHASSIS — 10 PINS

REMOTE TALLY — 10 PINS

UPGRADES 02,03.02



NOTES: 1. DIODES ARE IN100A UNLESS NOTED OTHERWISE.

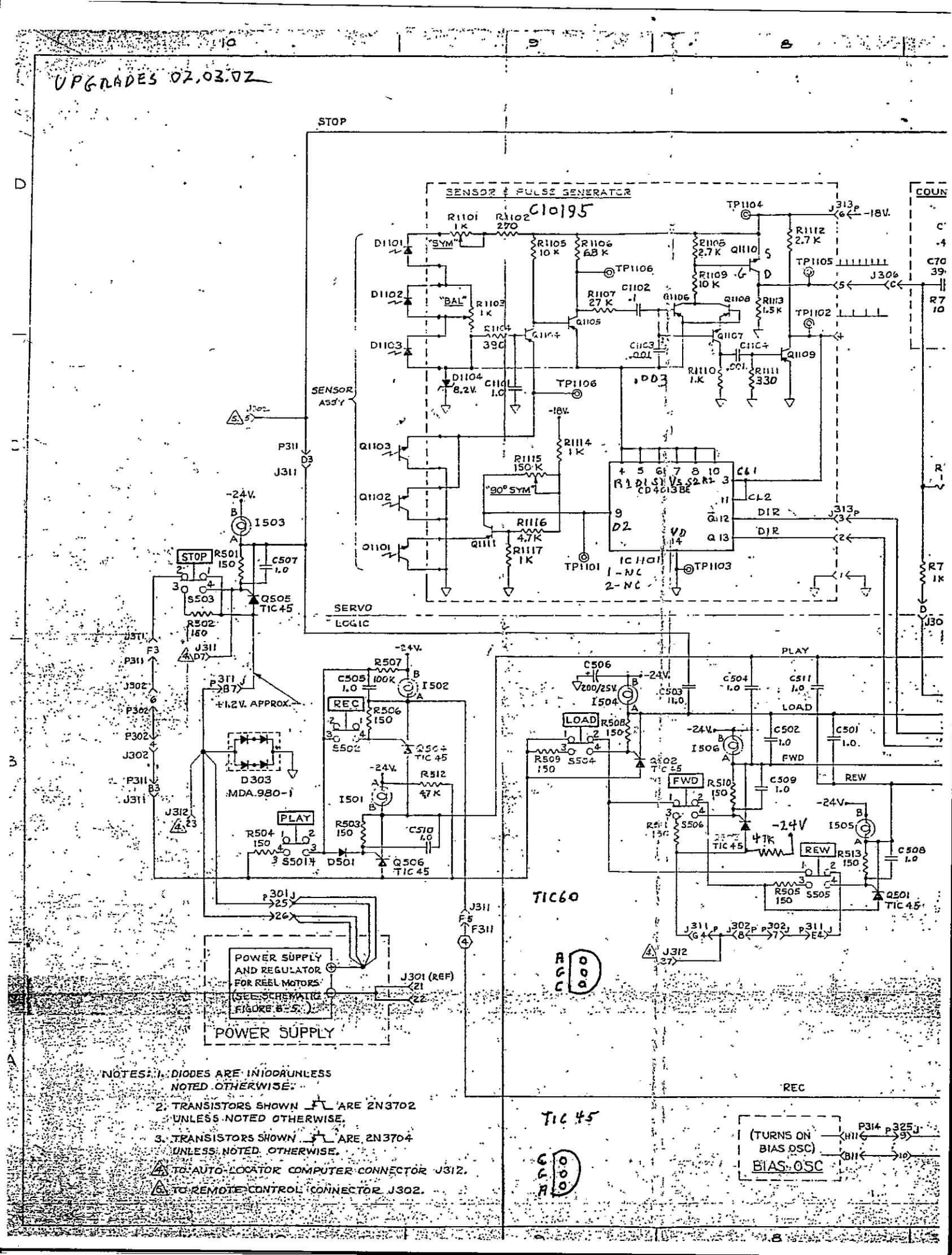
2. TRANSISTORS SHOWN ARE 2N3702 UNLESS NOTED OTHERWISE.

3. TRANSISTORS SHOWN ARE 2N3704 UNLESS NOTED OTHERWISE.

4. TO AUTO-LOCATOR COMPUTER CONNECTOR J312.

6. TO REMOTE CONTROL CONNECTOR J302.

UPGRADES 02,03.02



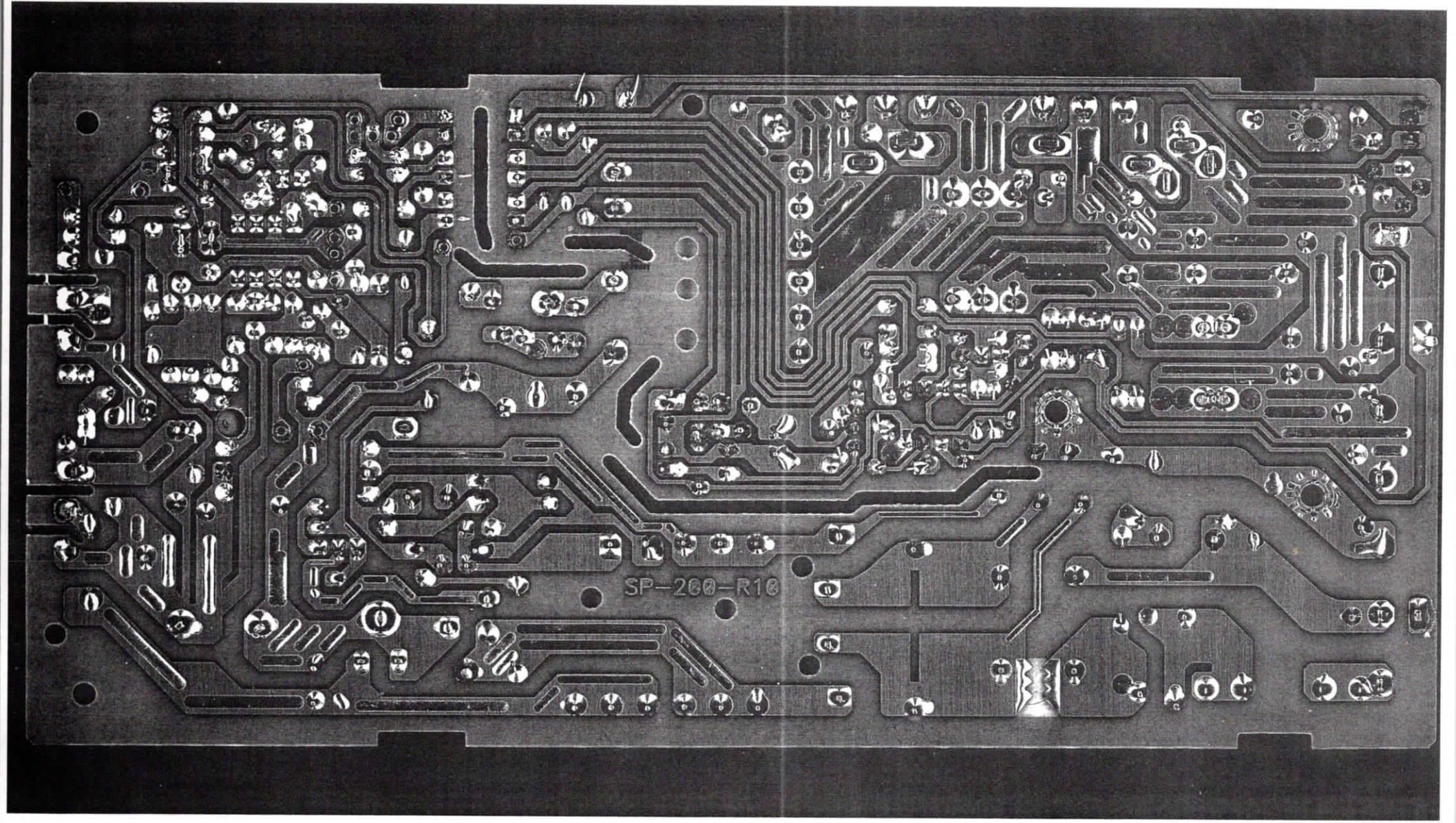
NOTES: 1. DIODES ARE IN1004 UNLESS NOTED OTHERWISE.

2. TRANSISTORS SHOWN ⊣└ ARE 2N3702 UNLESS NOTED OTHERWISE.

3. TRANSISTORS SHOWN ⊣└ ARE 2N3704 UNLESS NOTED OTHERWISE.

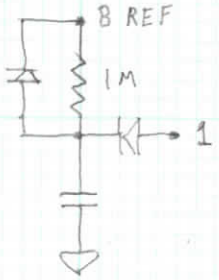
4 TO AUTO-LOCATOR COMPUTER CONNECTOR J312.

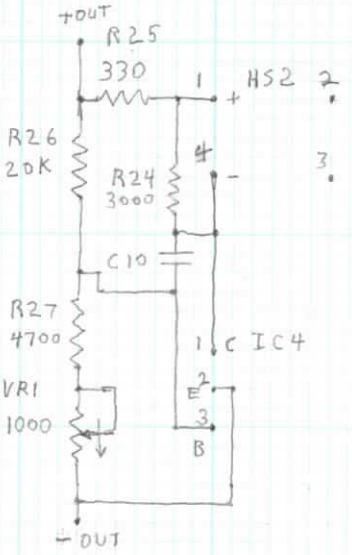
5 TO REMOTE CONTROL CONNECTOR J302.

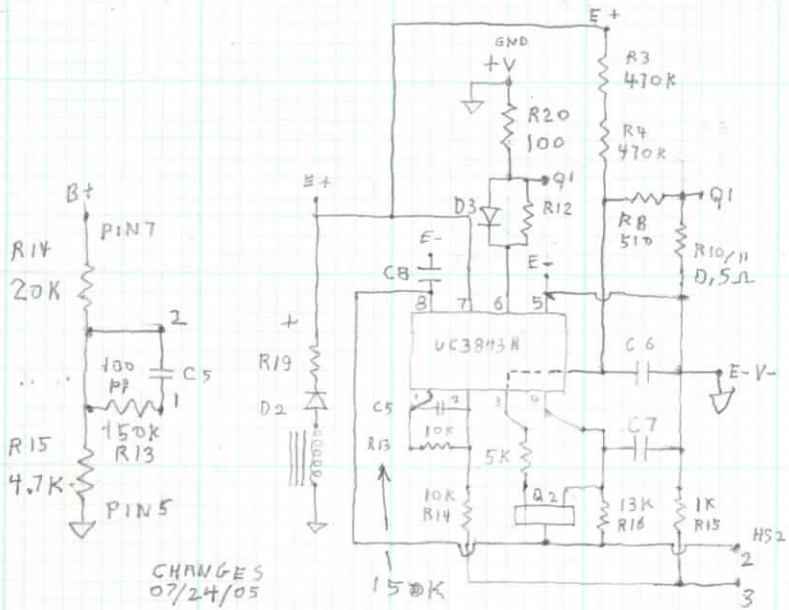


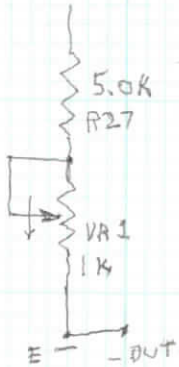
SP-200-R10

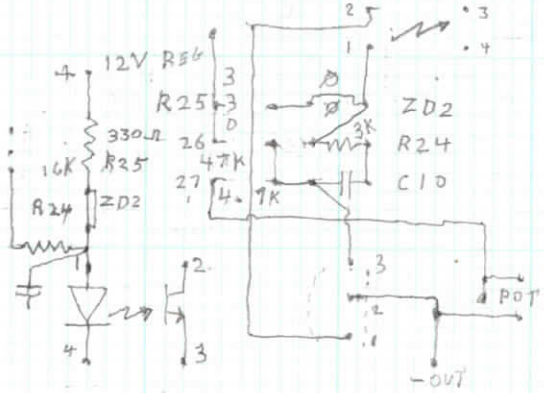
SOFT - START











IC4

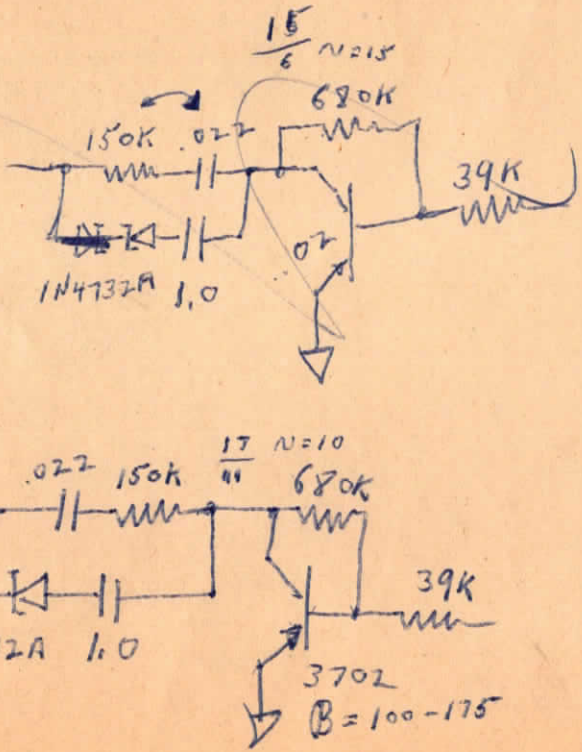
CHANGES
07/24/05

REMOVE R14

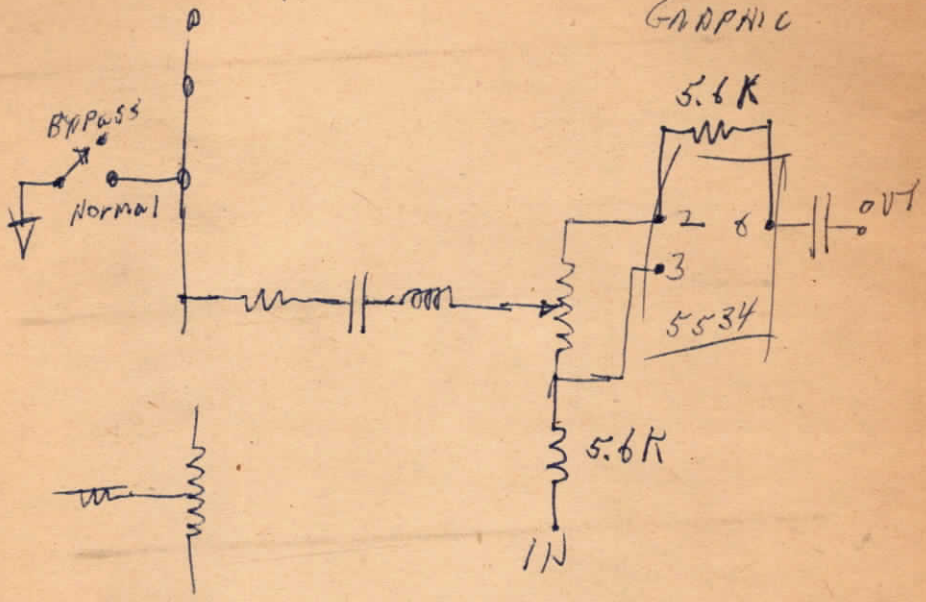
SOLDER 22K RESISTOR FROM IC PIN 2 TO IC PIN 7 (R13B)

V	R24	R25	V	R26	R27
12.0	3.0K	200	12.0	20K	4.7K
15.0	3.0K	336	15.0	22K	3.9K
24.0	3.0K	330	24.0	47K	5.1K

K2996


15/6 N=15
680K
150K
.022
39K
Q2
1N4732A 1.0
17/11 N=10
.022
150K
680K
39K
(2) 1N4732A 1.0
3702
B = 100-175

KLARK-TEKNIK DN27
GRAPHIC

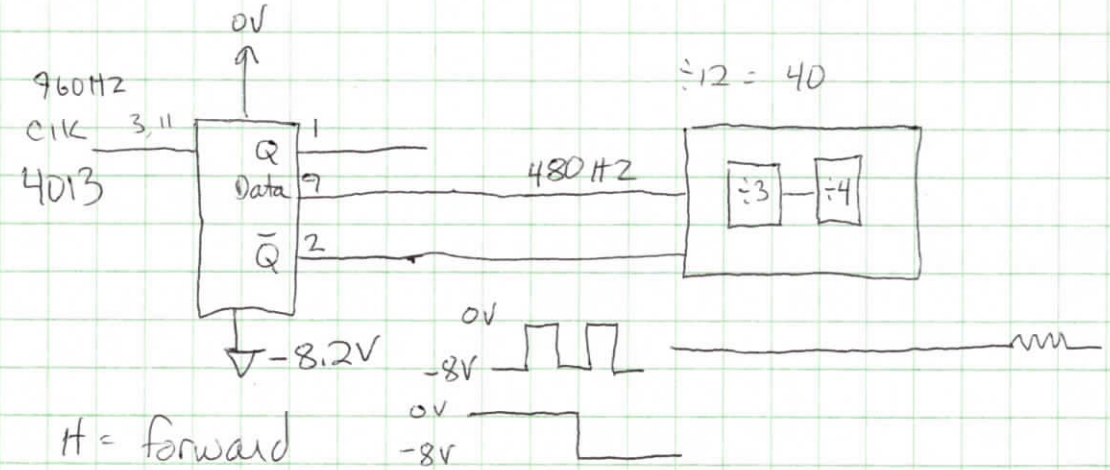


27I-6906

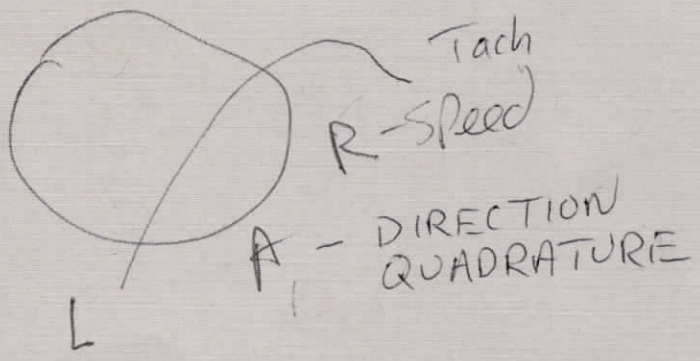
ST_COMP
Connector

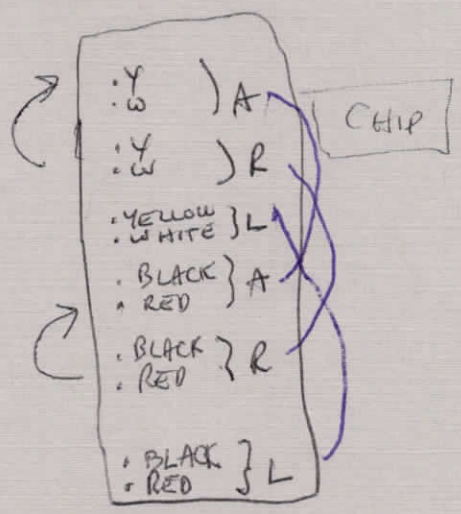
-24V from PWR supply
Stop Trigger
+5V
GND

960 ÷3 ÷8



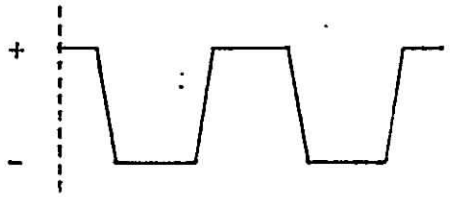
H = forward


Tach
R - Speed
A - DIRECTION
QUADRATURE
L


Y
W
A
Y
W
R
YELLOW
WHITE
L
BLACK
RED
A
BLACK
RED
R
BLACK
RED
L
CHIP

FRONT

12. Rotate Sensor 3 so that the scope trace starts with half of the positive portion of the square wave.

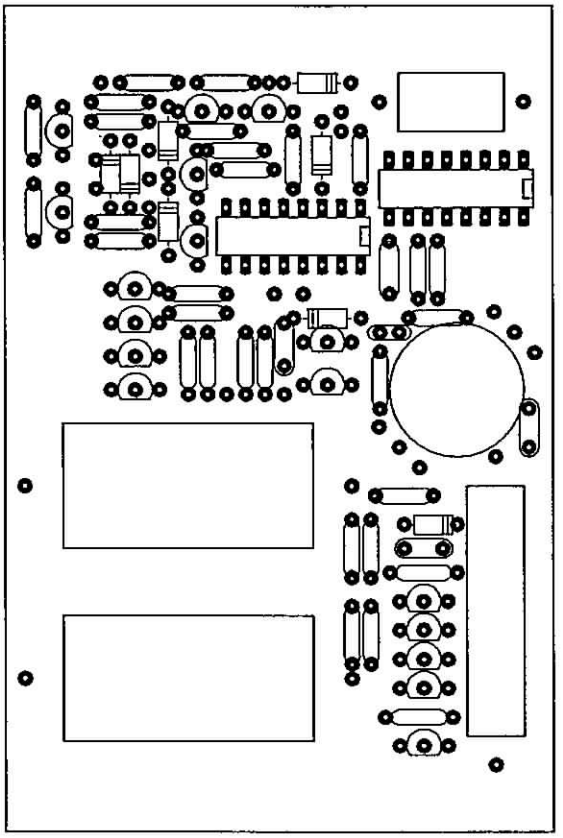


13. Run deck in rewind mode. The left side of the scope trace should now start with the negative portion of the square wave. If the slope of the square wave shows at the start of the trace, readjust Sensor 3. For better clarity of waveform, increase scope sweep speed.

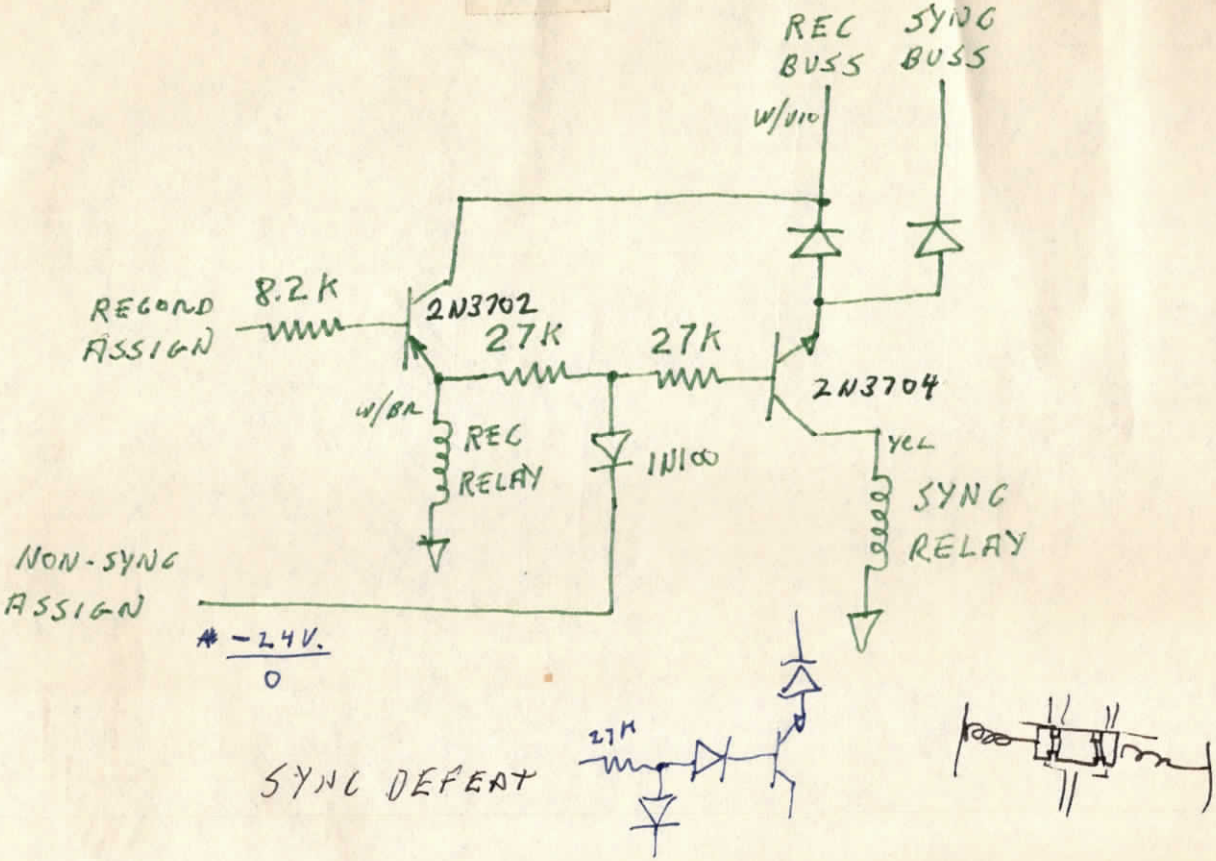
14. Run deck in fast forward mode. Trace should start with the positive portion of the square wave during acceleration and deceleration. If the slope of the square wave shows at the start of the trace, readjust Sensor 3.

Sensor alignment is complete when, with deck operating at any shuttle speed in either direction, scope trace starts with no slope showing.

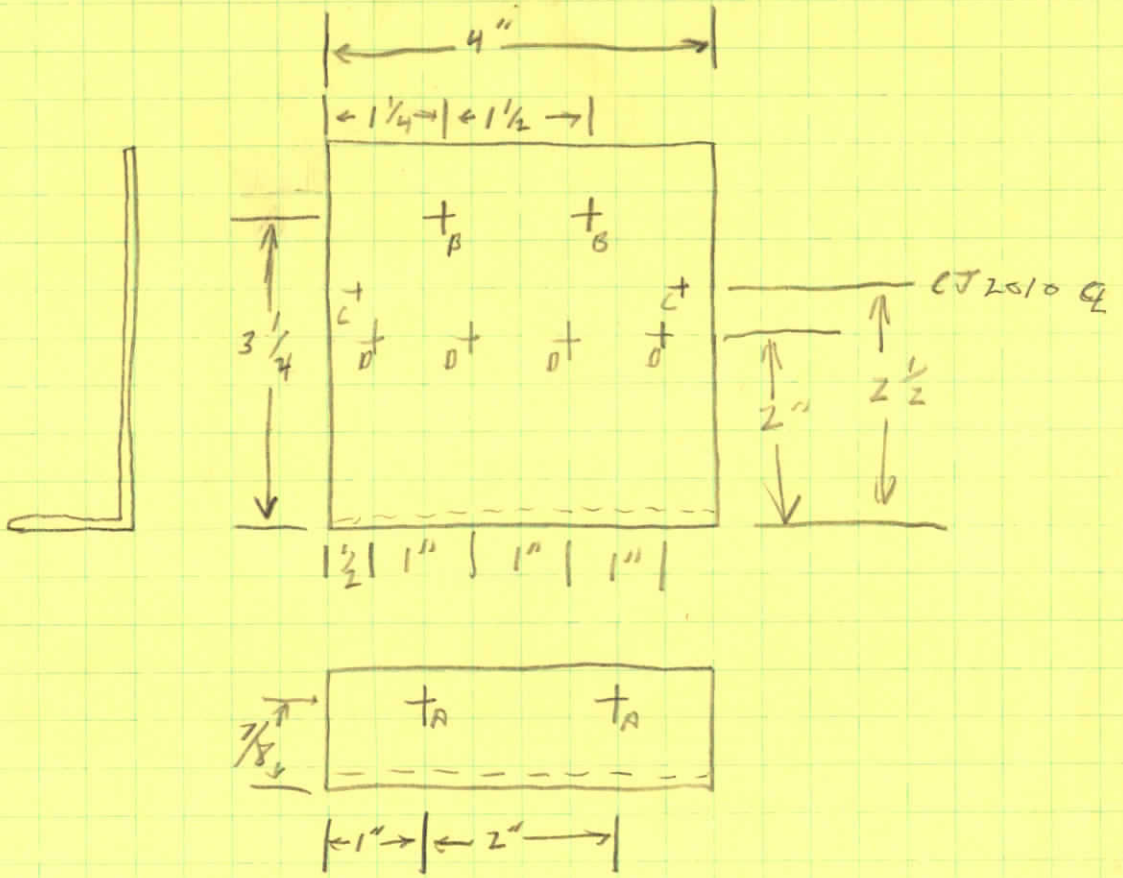
11-17-79 JFS



UPDATE 11-11-71



OSCILLATON

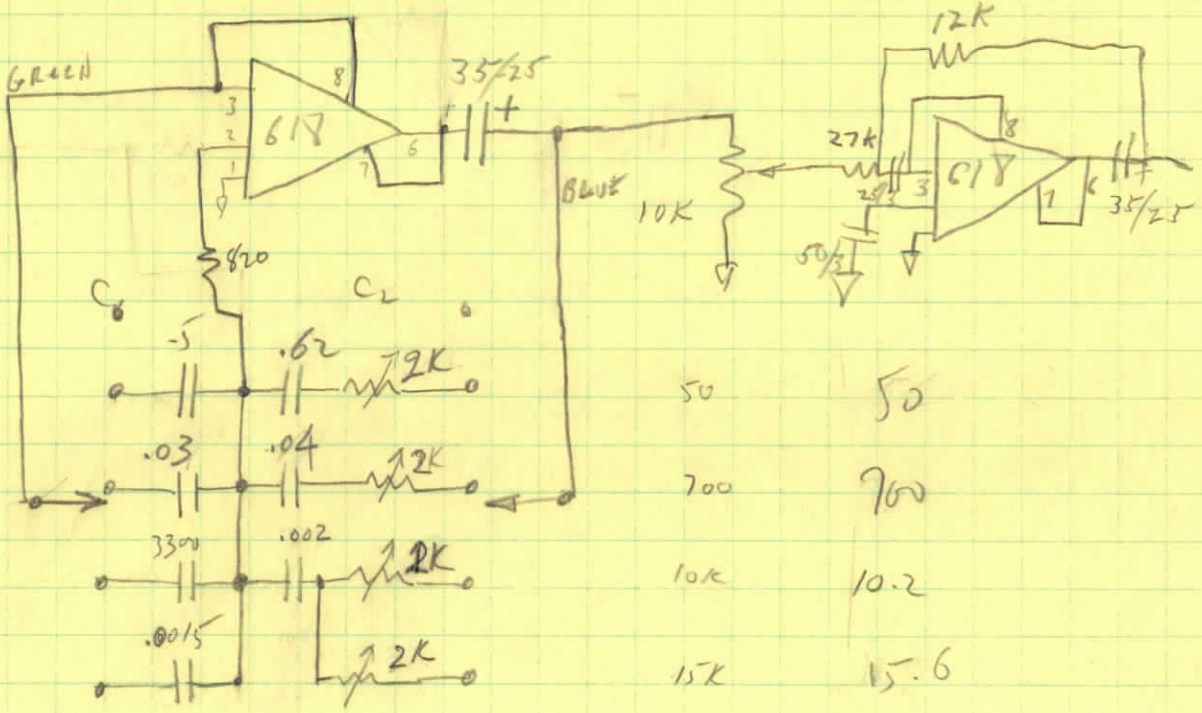


A = 3/8" hole
B = 3/4" hole & Mounting holes for socket
C = 6-32 hole
D = 1/4" hole

OSCILLATOR

9/29/70

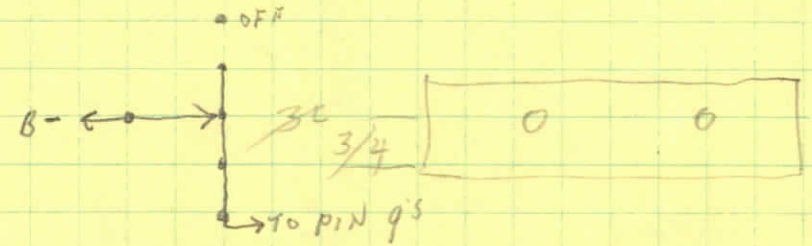
.068
.018
.086

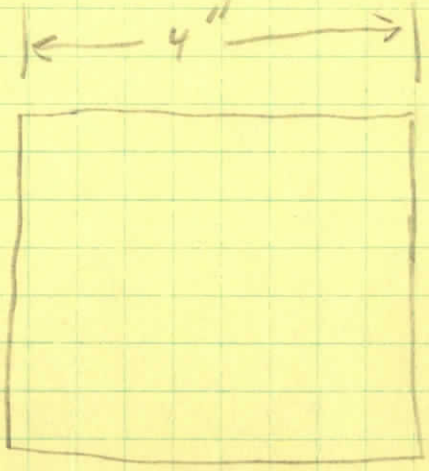


Bridged

C_1	C_2	R
.47	.575	1.7K
.033	.0403	1.5K
.00315	.00202	750
.00122		1.4K

50	50
700	700
10K	10.2
15K	15.6

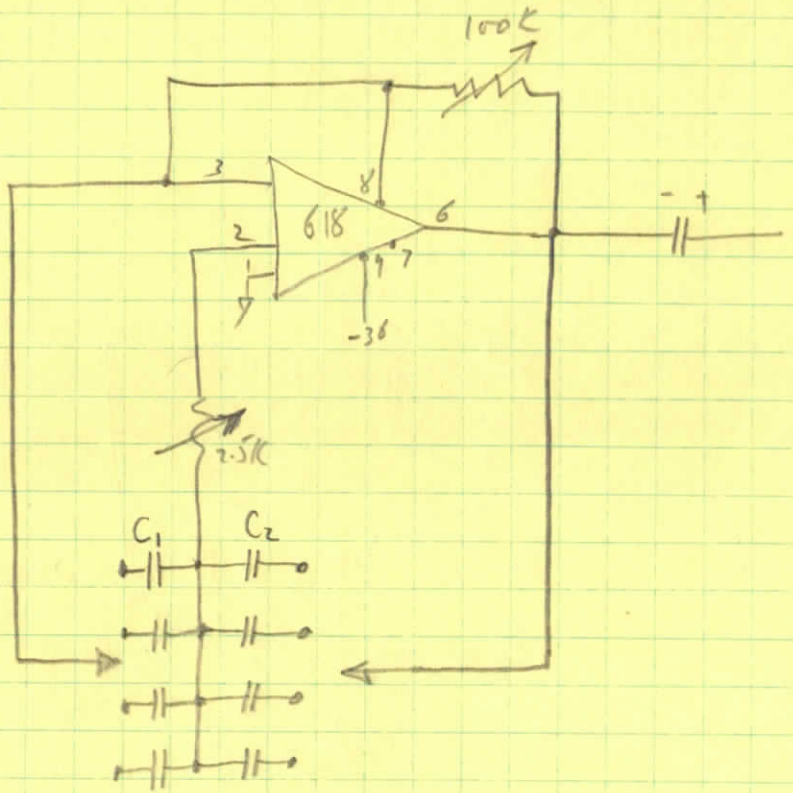




3 POLE 5 POSIT. SHORTING
OAH 399224

oscillator

9/18/70

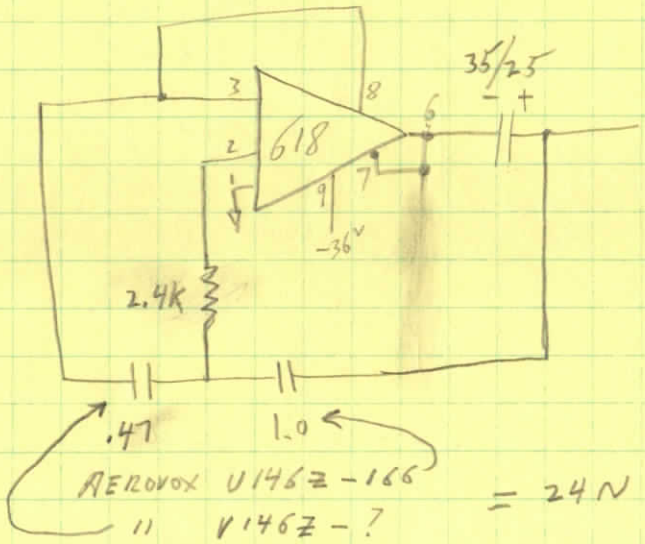


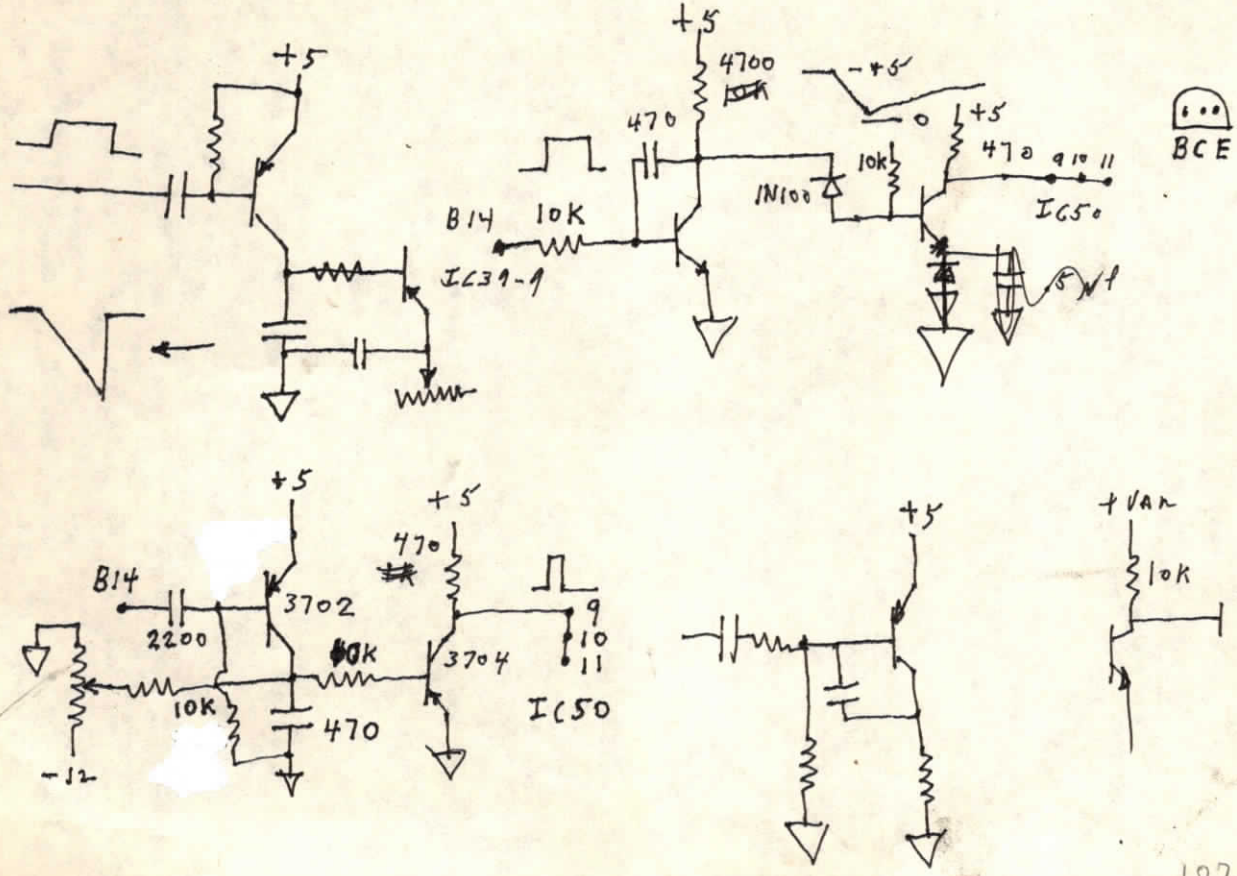
freq.

50 cps
700 "
10 KC
15 KC

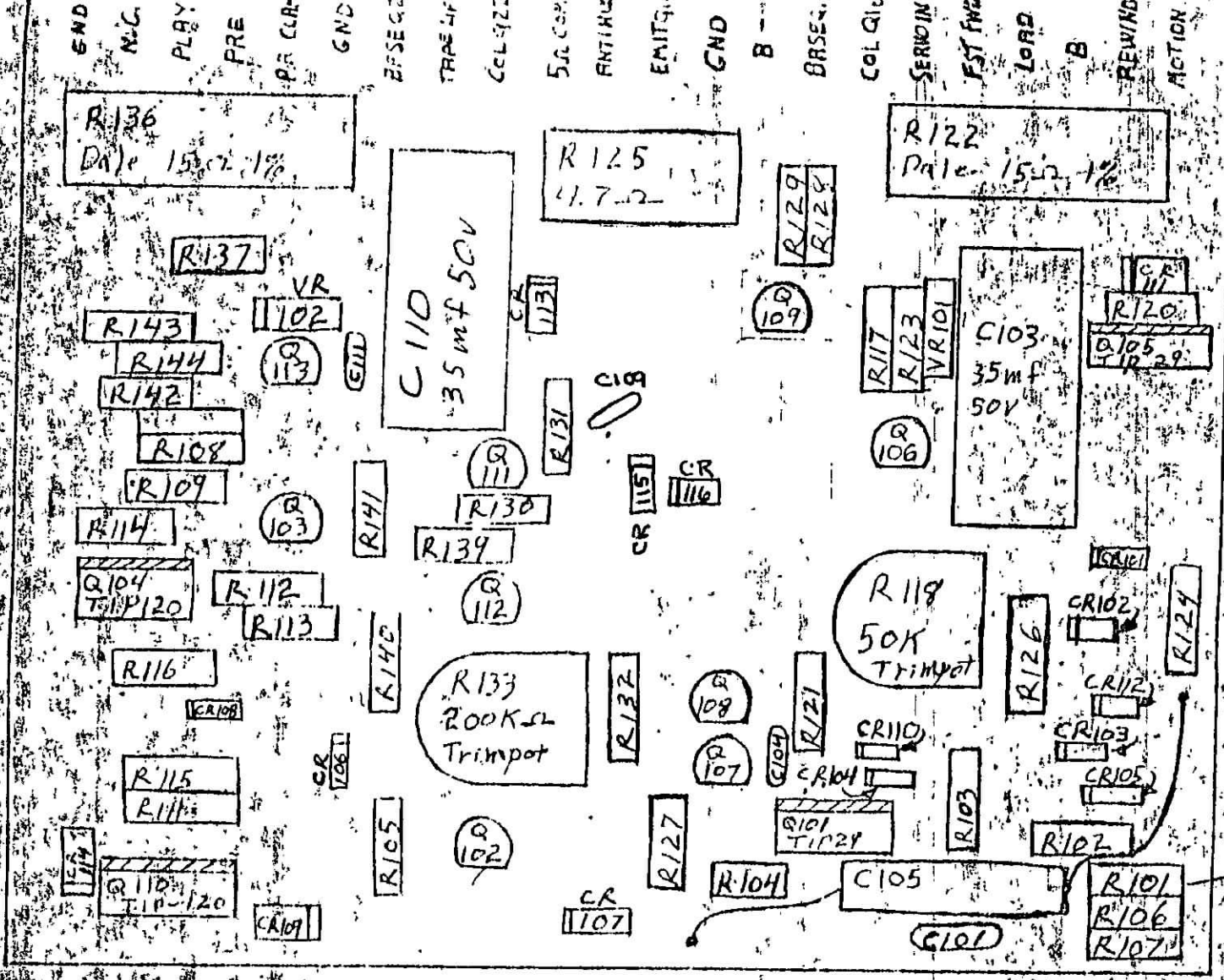
20 cps Oscillator

9/18/70

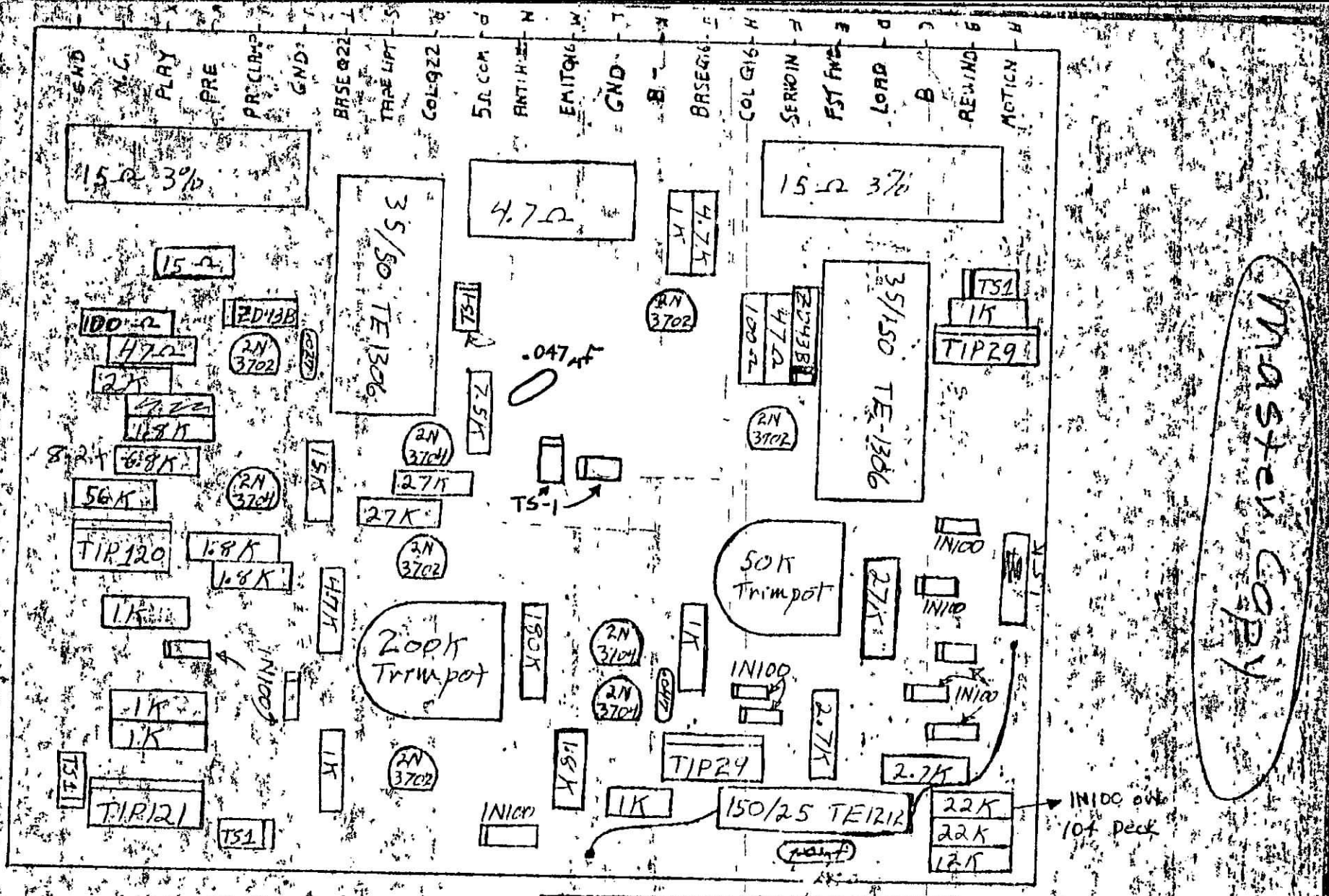



+5
4700
470
B14
10K
IC39-9
IN100
10k
IC50
BCE
3702
2200
3704
IC50
-12
+VAA

10297



STEPHENS ELECTRONICS, INC.		
SCALE 2:1	APPROVED BY:	DRAWN BY: PKW
DATE: 10/10/74		REVISED
Servo Card # 310163		DRAWING NUMBER 310163

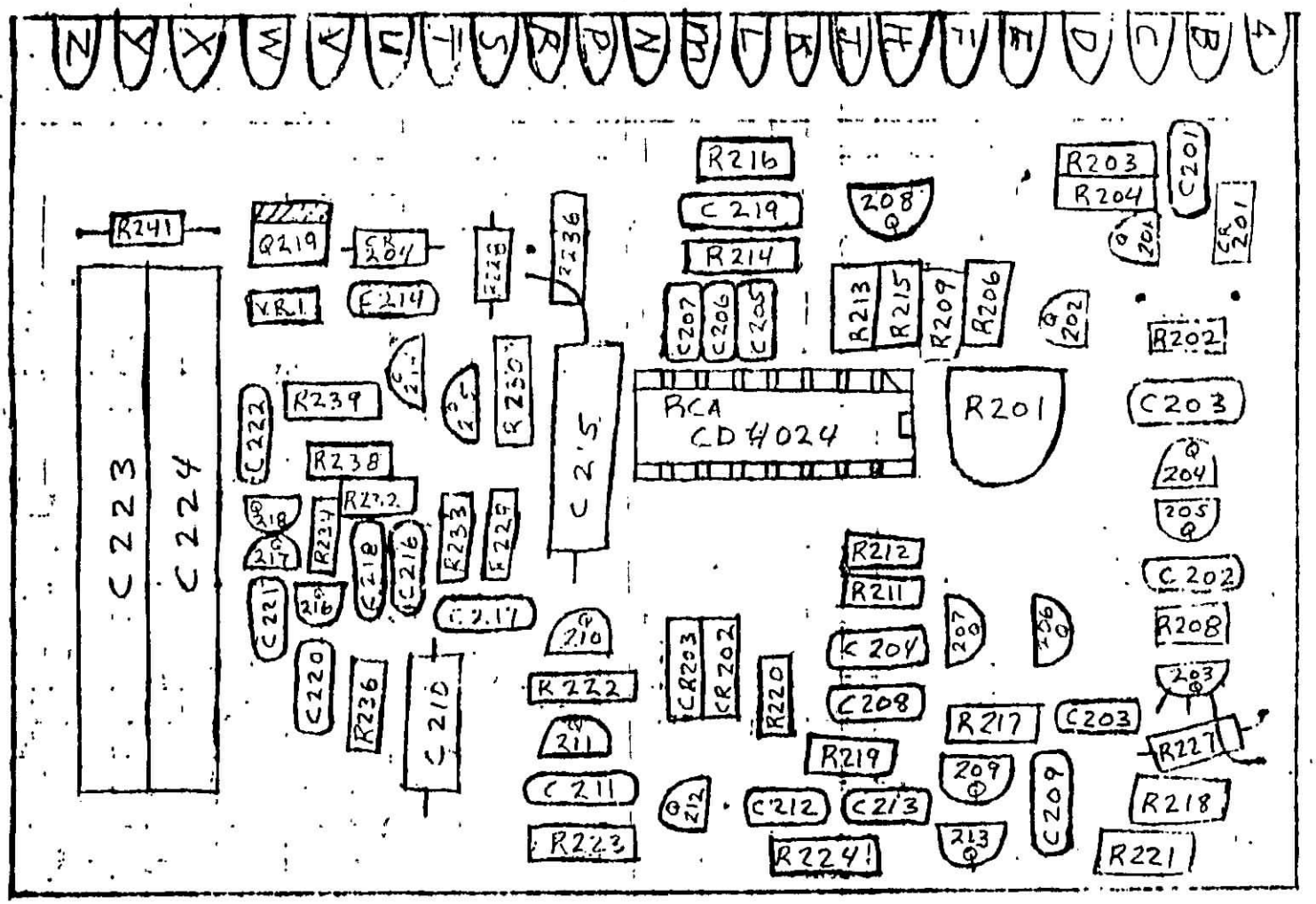


STEPHENS ELECTRONICS, INC.

SCALE: 2:1	APPROVED BY:	DRAWN BY: RKW
DATE: 10/10/74		REVISED
		DRAWING NUMBER

Card # 310164

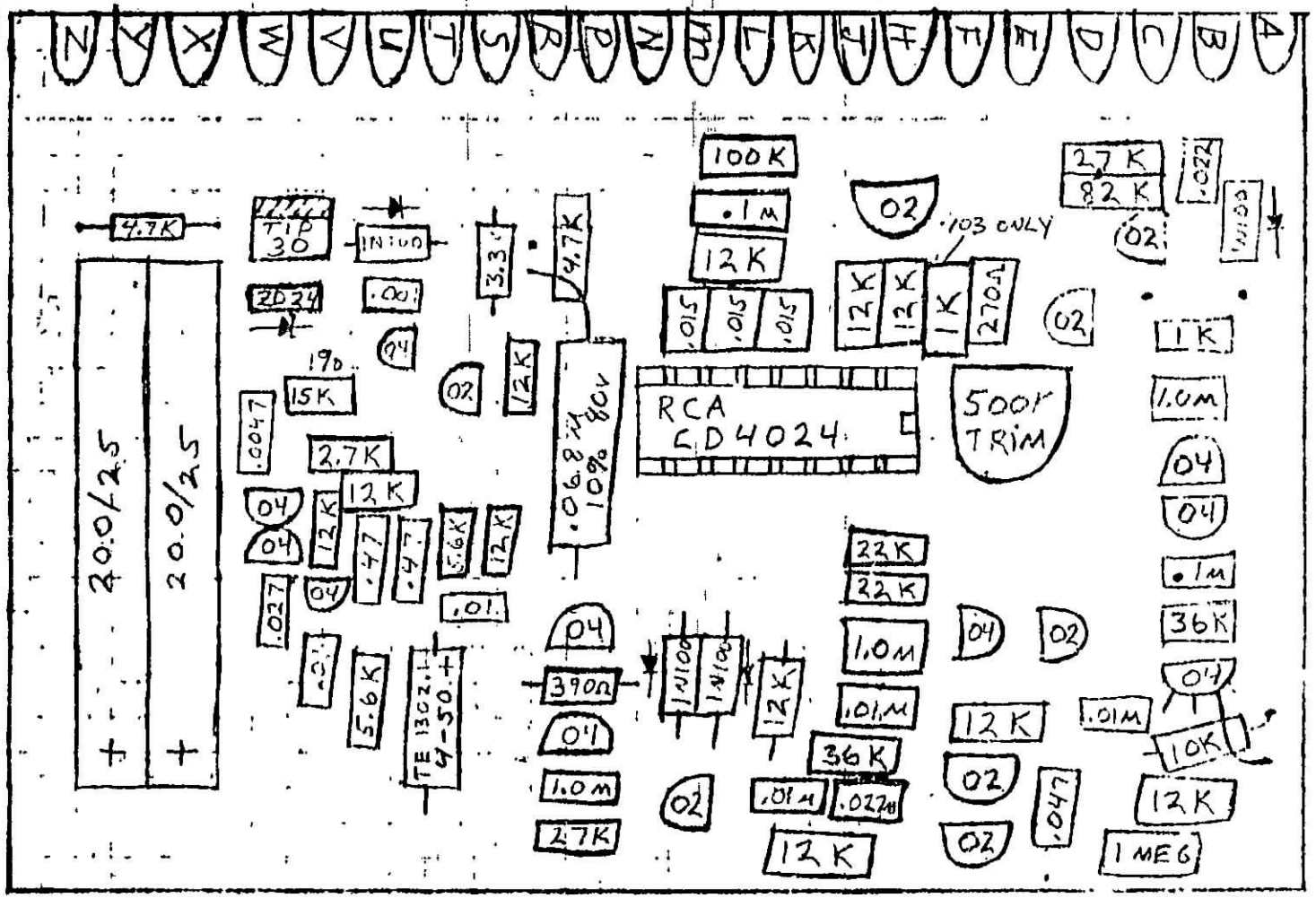
811D-103-194



2/3/76
Ronaldj

Card # 310164

811D-103



103 - ADD 1K

104 - NO 1K

CONVERTER 310164

2/3/76

REF. # ON SCHEMAT

Light from led A1 biased by R6 (14)
(R1 & R2 no longer used) goes thru tach
generator disc into phototransistor (A1),
thru cap C1 to XSTR Q32 and into Q33. (5)

Signal then goes thru C2 to coincidence
counter Q34 & and Q35 which eliminates spikes. (6)
WAVE SHAPER

? Signal Then goes to freq. doubler Q36 and Q37 (6)?
which doubles 480 HZ to 960 HZ at 15 IPS. The
output is labeled (7) on print.

Here the signal splits; ① one side goes down to (10)
countdown ~~circuit~~ circuit IC-1, and the other
side ② goes down to the converter, and ③ to the anti (8)
hunt circuit.

~~The Freq. to Voltage converter Q11~~

The 960 HZ signal goes to test point A. thru buildout
R 8.

The 960 HZ signal goes to the freq. to volts converter (8)
RT. BOARD.
~~thru~~ in PIN card pin 5 ~~(rt board board.)~~
and then C15 to Q11 where ~~C16~~ & precision
cap. C16 is charged. This is the sawtooth
waveform generator.

log 30 The discharge rate of C16 determines the play speed of the machine and ~~The discharge of C16~~ motor is controlled by the three sets of resistors R28, R29 for 60 IPS, R30, R31 for 15 IPS and R32, R33 for 30 IPS. Each of these are to ground thru selector switches.

The signal then goes thru a two stage low pass filter net. Q30 + Q31 which eliminates high freq. spikes. (22)

log 35 The output of the low pass filter produces an error signal of varying DC level which feeds Q12 one half of differential amp ~~Q30 and Q31.~~ Q12 and Q13. (9)

ref Page 5 (log 96) ~~Q13~~ The other half of the diff. amp Q13 receives its input from the phase detector via the VSO. The diff. amp has a capture range of ± 5%. (9)

The output of the differential amp ~~feeds~~ pin 7 – card 164, THEN thru pin F – card 163 AND feeds the preamp XSTR. Q15 which drives Q16, the motor XSTR. and the motor TAKEUP (14) (16)

Reference C15, line 3E goes to card 164 pin A and then up thru R82 to point 6B. This is the input to Q25. (20)

(20)

When the tach Gen is running Q 25 is shut off. This also shuts off Q 27 so that the tape lifter is inhibited when the tach gen has output (tape running). However

However when in rewind or fast forward Q 26 turns on which ?

(20)

Q 25 has many inputs. 1) a 960HZ recognition input from the Tach gen. 2) a DC inhibit signal from the load switch thru CR 25.

When the VSO is in the sync position, not normal run mode, it bypasses the output of the phase detector and uses a resistor network which supplies a DC voltage.

(14)

These two voltages are summed at the output of Q 12 and go to the input of the servo amp, Q 15, Q 16 and the takeup motor.

(19)

The anti-hunt circuit Q14, shuts down the counter when the machine is in the stop mode. This keeps the tape lifters from operating when the capstain is made to rotate. It also keeps the motors from turning.

log 50 960 signal out of reference line 7 also goes (20)
to the tape lifter circuit. It enters
~~This line also has a test point (Y)~~
Q25 and goes to Q27 which activates
the tape lifter solenoid.

After stop button is pressed the tape
lifter will not ~~come~~ deenergize until
the tach wheel has stopped.

log 56 The anti-hunt circuit is Q14
As more current goes thru the take-up
motor, Q14 goes more negative.

log 71 Q26 is the play XSTR. and is on when
play button is pushed, which turns
off Q27 and turns on Q~~20~~13 which
~~enables~~ turns on the pulling motor servo
and relapses the feed motor servo.

log 80 The phase detector receives its input from
the countdown chip.

log 80 The countdown chip IC-1 has its input from the 960 tach generator.
Its output is a divide by 16, 32, or 64.
The two outputs not needed are grounded by the speed switches.
The divide by 16 is for 15 IPS,
32 is for 30 IPS,
64 is for 60 IPS.

log 87 The ~~fotto~~ phase locked loop is not yet understood.
The output of the countdown chip goes thru Q7. also
A 60 line reference signal thru an isolation XFMR. goes thru Q4 is shaped and filtered and joins Q8 thru CR 3.
Q 7 output also goes to Q8 and also goes up to Q6 thru a RC FILTER NET ~~filter~~ (possibly 60 Hz.) and is summed with the output of Q8. and then is smoothed by C 14.
This signal goes to the VSO and
log 96 then to the differential amp Q 13.

The phase det. output feeds the meter thru Q 9.

Q18 and Q19 are the rewind and Fast forward circuits.

log 108 The supply reel servo has a 2 stage preamp Q20+Q21 and ~~and the~~ the takeup reel servo has a one stage preamp Q15 however it ~~Q15~~ is driven from the output of the differential amp. and has more gain there.

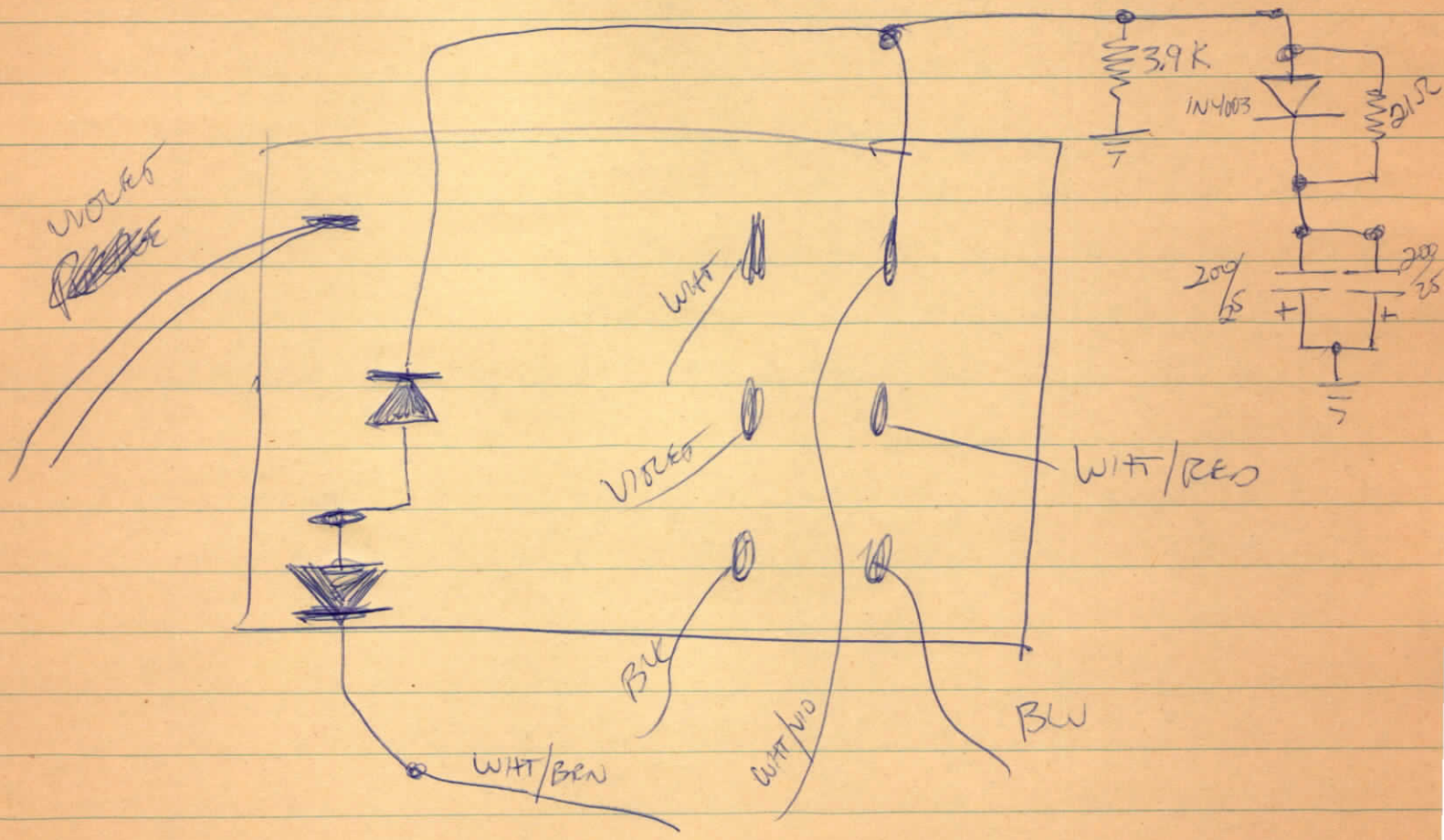
The slack ~~set~~ pot R__ (200K) biases Q30 which in turn biases Q21 which in turn turns on Q22 the motor XSTR.

R. 74 the 50K holdback tension control

log 122 1) Biases the input to Q20 which turns on Q21 and then Q22 and provides tension on the ~~supply~~ FEED motor and drops the voltage ~~across~~ across R60 the 5Ω watt 5 ohm resistor. The voltage drop across the 5Ω resistor is adjusted to 10 volts and is critical.

All ~~mode~~ transport control functions are turned on by grounding a control line except for STOP. LIFTING everything stops recorder. WHY???

AUDIO ARTS RECORD RELAY

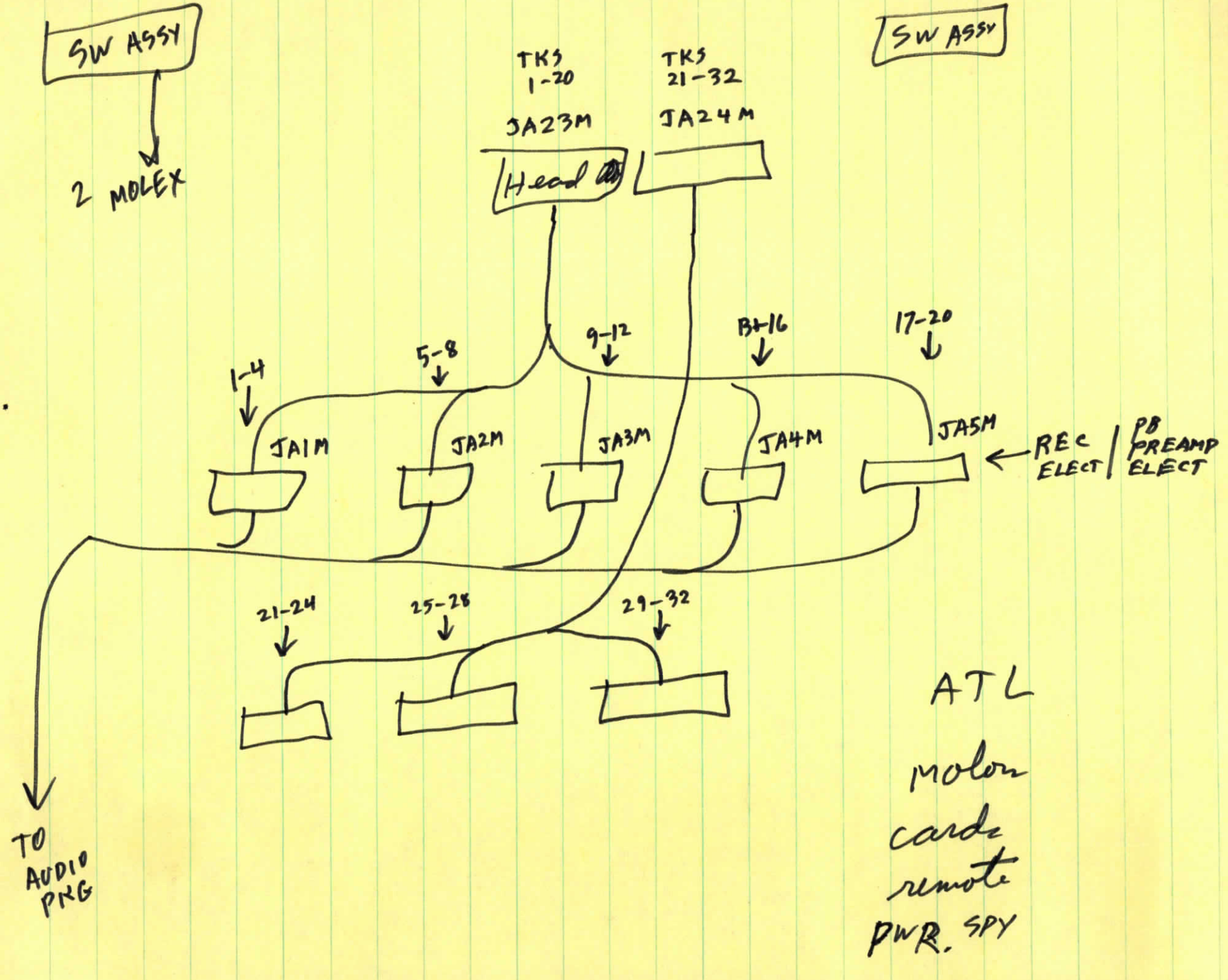


STEPHENS + 3M

	16TK	8	8, 9	8, 9, 0	7, 8, 9, 10
	24TK	12	12, 13	12, 13, 14	11, 12, 13, 14

3M 24TK erase	~~2.05MV~~	2.05MV	4.1MV	5.7MV	7.4MV
STEPHENS 24TK erase		2.1MV	3.6MV	5.3MV	6.5MV
3M 24TK BIAS		1.36MV	2.5MV	3.85MV	5.1MV
STHEPHENS? 24TK BIAS		1.65MV	3.15MV	4.7MV	6.2MV

3M 16TK erase	3.3MV	6.5MV	9.0MV	10.5MV
STHEPHENS? 16TK erase	5.2MV	10.2MV	15.8MV	20.5MV
3M 16TK Bias	1.18MV	2.35	3.5MV	4.6MV
STEPHENS 16TK BIAS	1.85MV	3.5MV	4.9MV	7.2MV


SW ASSY
2 MOLEX
SW ASSY
TKS 1-20
TKS 21-32
JA23M
JA24M
Head
1-4
5-8
9-12
B+16
17-20
JA1M
JA2M
JA3M
JA4M
JA5M
REC ELECT
PB PREAMP ELECT
21-24
25-28
29-32
TO AUDIO PRG
ATL
motor
cards
remote
PWR. SPY

6-12-75
16TK-2

J.P.L.

16TK FEED MOTOR RUNS SLOW.

REPL. MOTOR FIELD ASSY. TESTED BEFORE, NOT AFTER. POSSIBLE CURRENT LIMITING IN WIRES, VOLTAGE DROP BETWEEN MOTOR XSTR. AND MOTOR.

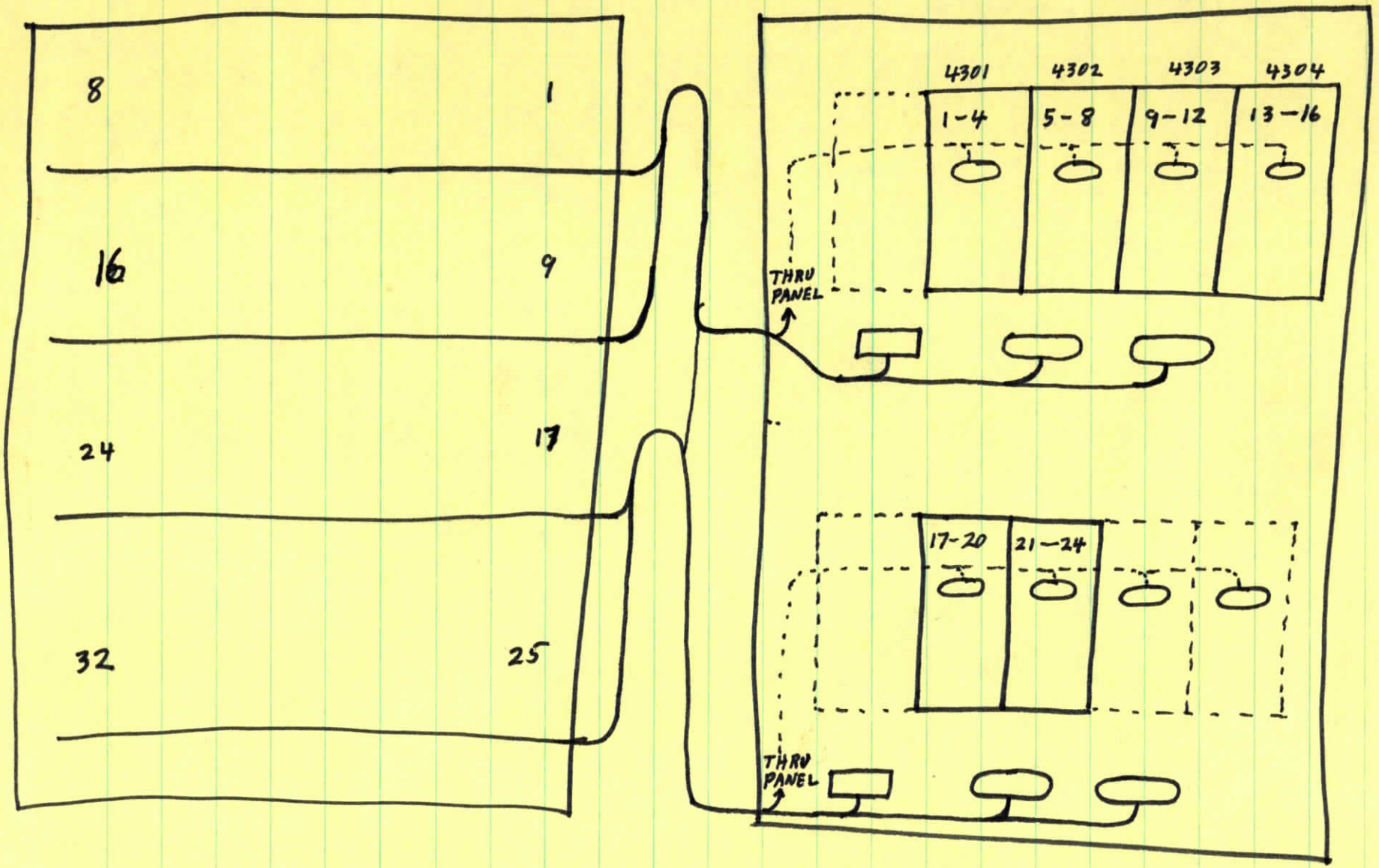
TEST RESULTS IN TRANSPORT FILE.

(B)

A21		SUPPLY MOTOR
A22		TAKEUP MOTOR (
A23		TAPE HEAD CO
A24		TAPE HEAD CO
A25		OLD POWER SU
A26		NEW POWER SU
A27		NEW OUTBOARD
A28		REMOTE CONTR
A29		INBOARD HARNE
A30		INBOARD HARNE
A31		TRANSPORT CA
		TR
A32		TRANSPORT CA
		TR
A33		AUDIO INPUT/O
A34		" "
A35		" "
A36		" "
A37		TRANSPORT
A38		AUDIO
A39		POWER SUPPLY

A1	RECORD ELECTR
A2	" "
A3	" "
A4	" "
A5	" "
A6 AGA+B →	" "
A7	PLAY LINE AM
A8	" " "
A9	" " "
A10	" " "
A11	" " "
A12	" " "
A13	MASTER BIAS /
A14	SLAVE BIAS /
A15	P.C. BOARD, LE
A16	P.C. BOARD, RI
A17	POWER + MODE SI
A18	TRANSPORT MODE
A19	RECORD ELECTRO
A20	RECORD ELECTRO
	(JA6M ROU

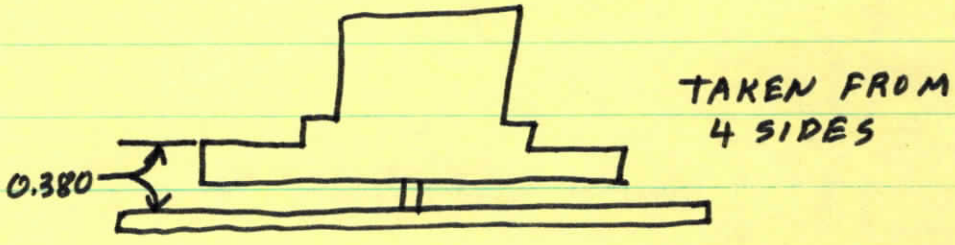
24TRK 8110-24/32
6-11-75 (B) rev 1006



6-12-75
16TK-2
J.P.L.

MOTOR (FEED) RUNS SLOW. REPL. FIELD ASSY (J.P.L.)

	BEFORE 6-12-75	AFTER
SUPPLY	28.3V / 0.5A UNLOADED 19 V / 8.0A LOADED - 4 7/8#	
TAKEUP	28.3V / 0.75A UNLOADED 20.5V / 8.0A LOADED - 5 1/8#	



BEFORE MOTOR WAS DISASSEMBLED MEASUREMENT TAKEN TO LOCATE HUB HEIGHT.

2 WASHERS UNDER EACH SIDE OF BEARING PILLOW BLOCK

PWR. SPY.: POWERTEC

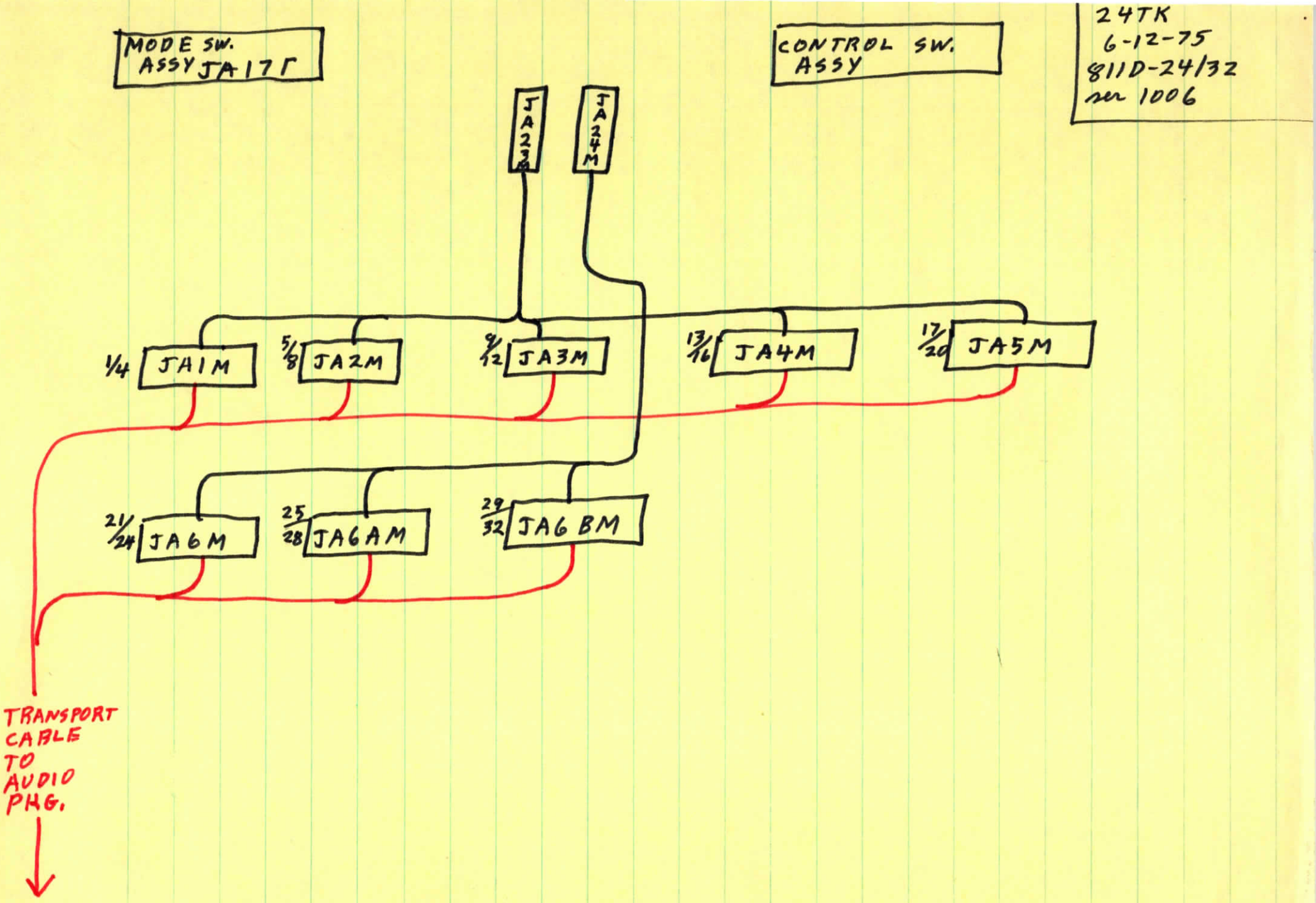
VOM (I): TRIPOLET 630NA

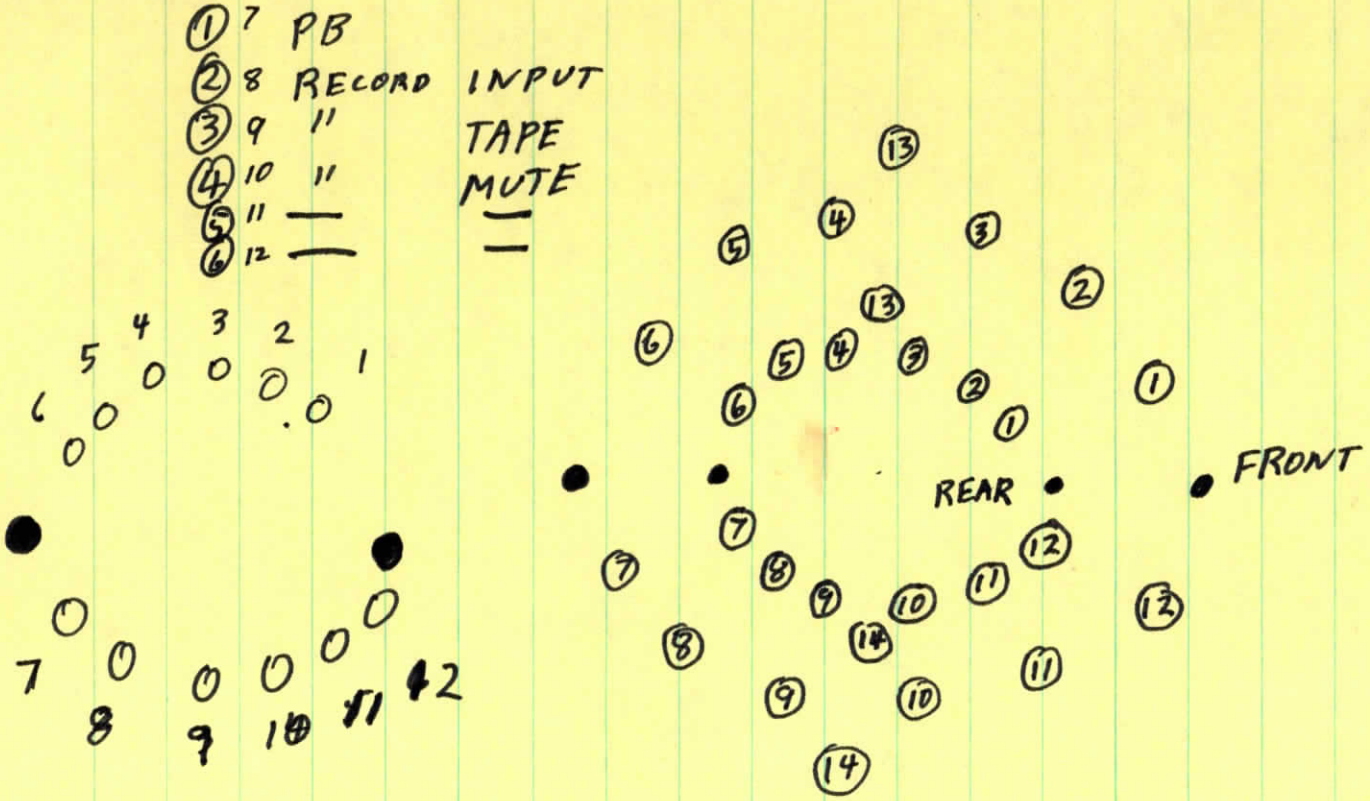
DVM (V): HEATH IM-102

GAUGE: CHATILLON 10#

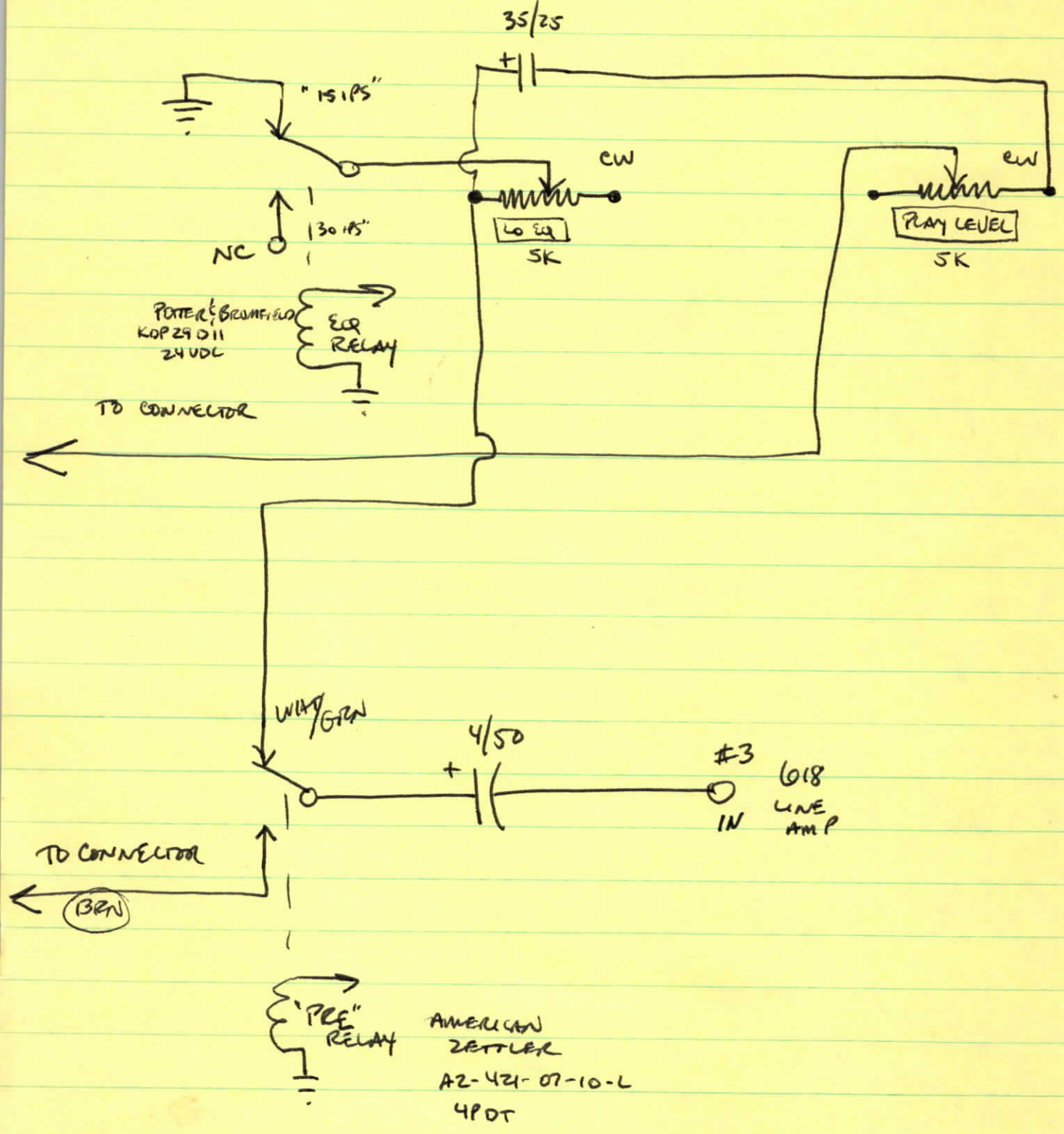
16TK
connector PA31M

1	A	⟷	JA1M	PIN	12C	7A	⟷	JA2M	PIN 13B
	B	⟷	"	"	11D	B	⟷	"	" 10A
	C	⟷	"	"	3D	C	⟷	"	" 6A
	D	⟷	"	"	2C	D	⟷	"	" 2A
2	A	⟷	JA2M	PIN	12C	8A	—	JA3M	PIN 13B
	B		"	"	11D	B	—		10A
	C		"	"	3D	C	—		6A
	D		"	"	2C	D	—		2A
3	A		JA3M	PIN	12C	9A	—	JA4M	PIN 13B
	B		"	"	11D	B	—	"	" 10A
	C		"	"	3D	C	—	"	" 6A
	D		"	"	2C	D	—	"	" 2A
4	A		JA4M	PIN	12C	10A	—	GROUND	
	B		"	"	11D	B	—	"	4 seperate
	C		"	"	3D	C	—	"	Black wires
	D		"	"	2C	D	—	"	
5	A		GROUND			row 11 thru row 14 BLANK			
	B		"	4 seperate		NOT USED.			
	C		"	black wires.					
	D		"						
6	A		JA1M	PIN	13B	15A	—	Ground	
	B		"	"	10A	B	—		
	C		"	"	6A	C	—		
	D		"	"	2A	D	—		

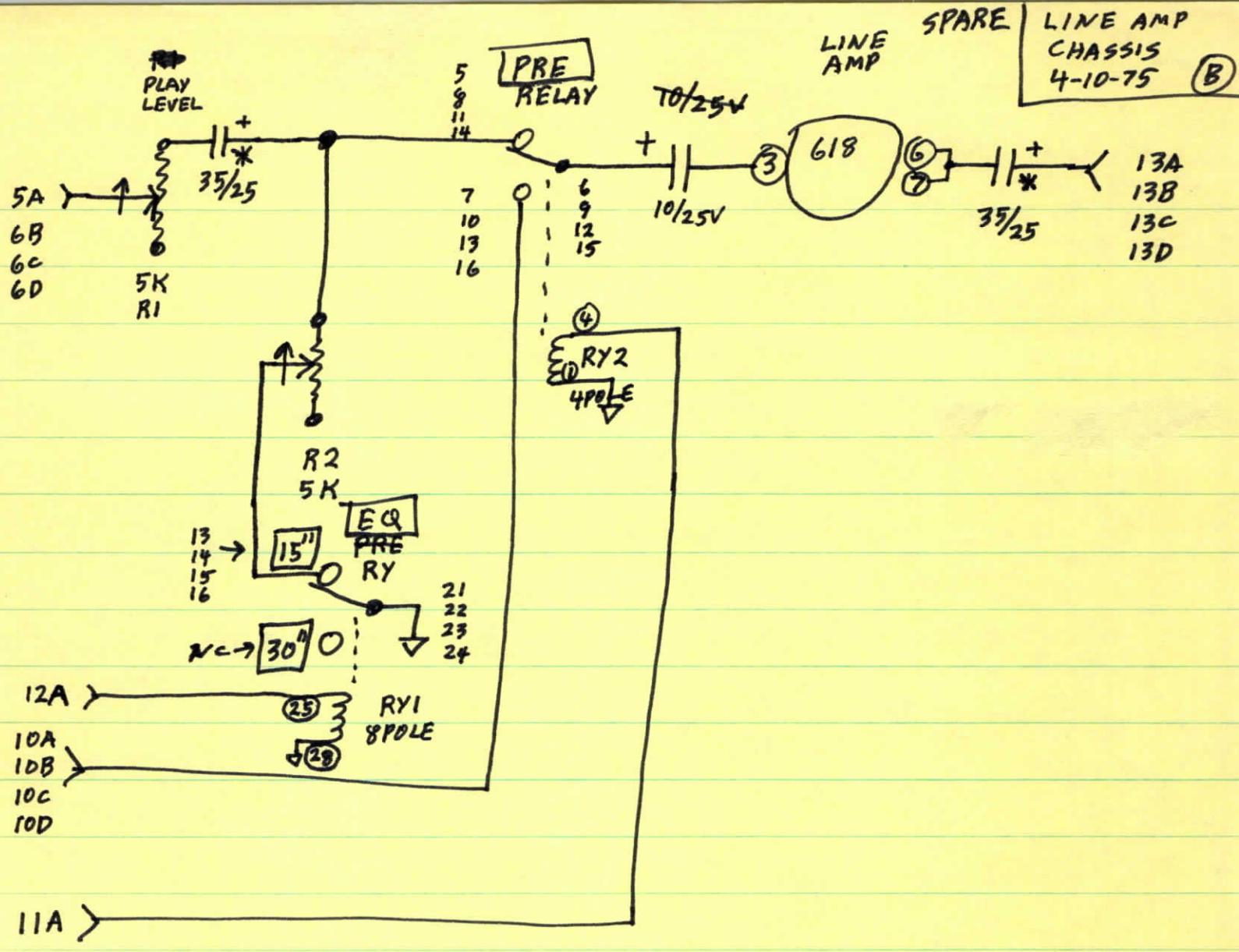

MODE SW. ASSY JA17
CONTROL SW. ASSY
24TK
6-12-75
811D-24/32
ser 1006
JA23M
JA24M
1/4 JA1M
5/8 JA2M
9/12 JA3M
13/16 JA4M
17/20 JA5M
21/24 JA6M
25/28 JA6AM
29/32 JA6BM
TRANSPORT CABLE TO AUDIO PHG.


1 7 PB
2 8 RECORD INPUT
3 9 "
4 10 " TAPE
5 11 — MUTE
6 12 —
REAR
FRONT

PRE RELAY SIG. PATH



TAKEN FROM SPARE LINE AMP CHASSIS 6/9/75 JPL

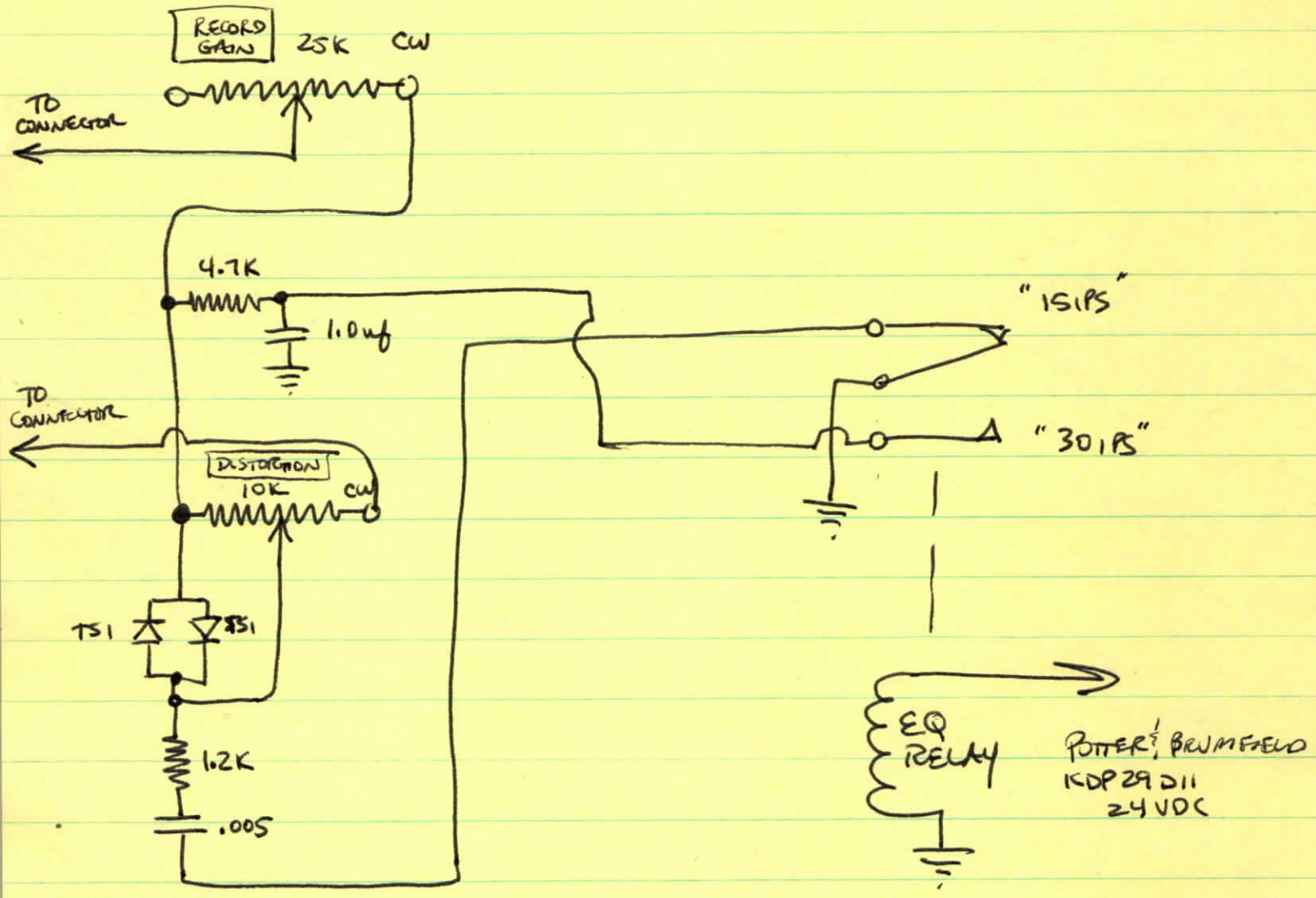


R1 5K POT SPECTROL 48M9-5K Ω / 140-7316
R2 " " " " / " - "
RY1 8PDT PB KDP29 D11
RY2 4PDT AZ 421-07-10L

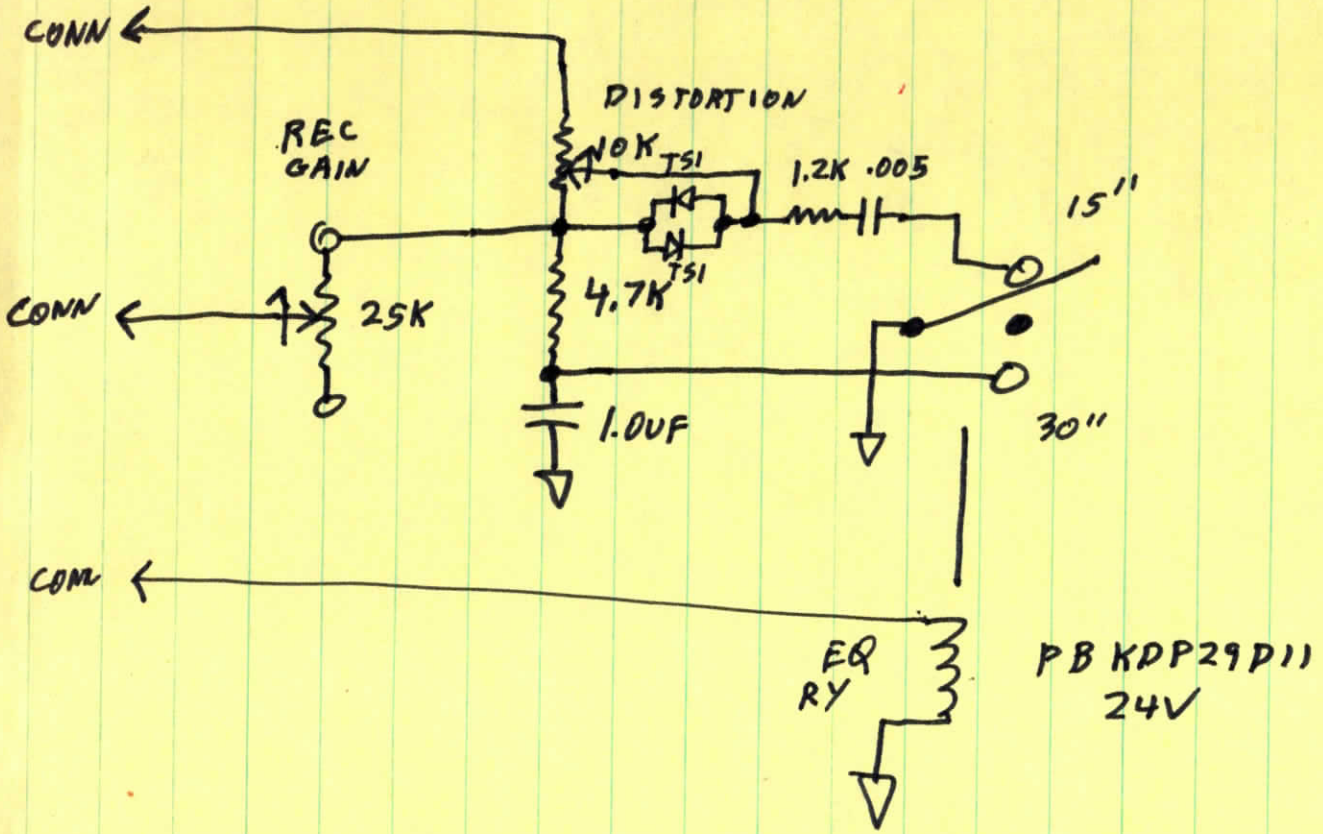
	PRE LITE	PRE RELAY (BUTTON DOWN)
STOP	ON	ON
PB	OFF	OFF
REC	ON	ON
STOP	ON	ON

EQ relay normally open at 15 IPS.

RECORD LEVEL AND DISTORTION ADJUST



TAKEN FROM SPARE CINE AMP CHASSIS 6/9/75 JPL


CONN
DISTORTION
REC
GAIN
10K
TS1
1.2K .005
15"
CONN
25K
4.7K
TS1
1.0UF
30"
COM
EQ
RY
PB KDP29D11
24V

LEGEND → 2N3702 = "02"
2N3704 = "04"

Q38 – 2N3702 – EXT SYNC AMP

Q1
2
3
4 – 02
5 – 02
6 – 04
7 – 02
8 – 04
9 – 02
10 – 02
11 – 04
12 – 04
13 – 04
14 – 04
15 – 02
16 – HEP 36C – OLD NUMBER → 2N6329
17 – TIP 29
18 – 04
19 – 04
20 – 02
21 – 02
22 – HEP 36C – OLD NUMBER → 2N6329
23 – TIP 121
24 – TIP 121
25 – 02
26 – 04
27 – TIP 29 – NOW IS A HEP S5001
28 – TIP 36C – TAPE LIFTER XISTOR – NEW ADDITION – ON HEAT SINK
29 – TIP 30 – POWER REGULATOR ON 3101G4 BOARD
30 – 02 } LP FILTER
31 – 04
32 – 02 } – PREAMP FOR PHOTO XISTOR
33 – 02
34 – 04 } – COINCIDENCE COUNTER
35 – 04
36 02 } – DOUBLER
37 04

IC-1
A1 LED DIODE + PHOTOTRANSISTOR ARRAY
SENSOR TECH STRT 850A (MODIFIED)

R1 – 10K POT
2 – 1K
3 – 27K
4 – 82K
5 – 270
6 – 2K – (not in circuit any more)
7 – 36K
8 – 1K
9 – 12K
10 – 4.7K
11 – 36K
12 – 12K
13 – 36K
14 – 390
15 – 12K
16 – 12K
17 – 12K
18 – 12K
19 – 1 MEG
20 – 12K
21 – 3.3K
22 – 100K
23 – 340K
24 25K POT
25 – 100K
26 20K TEN TURN POT
27 – 82K
28 4.02K 1%
29 – 5K POT
30 – 24.9K 1%
31 – 7.5K POT
32 11K 1%
33 – 10K POT
34 – 3.3K
35 – 12K
36 – 12K
37 – 12K
38 – 12K
39 – 2.7K
40 – 2.7K

R41 40K 1%
42 15K 1%
43 50K
44 4.7K
45 – 1K
46 – 5.6K
47 – 47Ω
48 – 12K
49 – 100
50 – 5.6K
51 –
52 –
53 .47Ω 2WATT
54 4.7Ω 2WATT
55 – 15Ω 5WATT 1%
56 – 27K
57 1.8 K
58
59
60
61
62 – 27K
63 7.5K
64 270K
65 200K POT
66 – 510
67 – 2K
68 – 15K
69 – 27K
70 – 47
71 – 100
72 – 15Ω 5WATT 1%
73 – 1K
74 – 50K POT
75 – 1.5K
76 – 1K
77 4.7K
78 – 1K
79 – 2.7K
80 – 2.7K
81
82 – 22K
83 – 22K

R 84 – 12K
85 – 1K
86
87 – 1.2K
88 – 1.8K
89 – 1.8K
90 – 8.2K
91 – 1K
92
93 – 47Ω
94 – 100
95 – 150
96 – 150
97 – 150
98 – 150
99 – 150
100 – 150
101 – 150
102 – 47
103 – 150
104 – 47
105 – 47
106 36K
107 – 1.8K
~~108 – 1K~~
~~109 – 1K~~
~~110 – 47K~~
~~111 – 22K~~
~~112 – 1K~~
~~113 – 4.7K~~
~~114 – 8.2K~~
~~115 – 2.7K~~
~~116 – 15K~~
~~117 – 1K~~
~~118 – 1K~~
~~119 – 1K~~
~~120 – 100K~~
~~121 – 200K POT~~
122
123
124
125

R110 – 47K
R111 – 22K

RESISTOR LIST

NUMBERS NOT USED
0, 51, 52, 58, 59, 60, 61, 81, 86, 92

C1 – .022
C2 – 1.0
3 – .1
4 – 200mf/35V
5 200mf/25V
6 – .027
7 – .01
8 – 1.0
9 – .01
10 – .015
11 – .015
12 – .015
13 – .047
14 – 4/mf/50V
15 – .001
16 – .068 1%
17 – 1.0
18 – .47
19 – .01
20 – .1
21 – .005
22 – .01
23 – .47
24 – .027
25 – ~~.1~~ .1
26 – 35/50
27 – .047
28 – 150/25
29 – 1.0
30 – .027
31 – .1
32 – 200mf/25
33 – 1.0
34 – 1.0
35 – 1.0
36 – 1.0
37 – 1.0
38 – 1.0
39 – 1.0
40 – .1
41 – 35/50V
42 – 8/25V
43 – .01
44
45

C46
C47
C48
C49
C50

CAPACITOR
CHART

HIGHEST NUMBER
C43

02

1000 FA1B/1C
1002 FAB1
1004 FAB3
1006 FAB5
1008 FAB7
100A FBAB
100C FBAD

FAB3 equ 1006

FBC5

DC49

35 16
F805 = 08 02
F807 = 82 80
FB78 = 31

REGS = 1000
STUM = 100
HALT = 10F

```
;FE612J.ASM     08.19.98
;\PROGRAM\BOSCH\FE612
;Note: This program comes in 3 flavors, S16 only,
;      Ver A=S16, Ver B=S35 , Ver C=Both.    See JFS

07A0  TELE:   LXI   D,PICMODE  ;F807   xxxm mmmm; x=fps, m=MODE
07A3          LXI   H,FILMMODE ;F805
07A6          LDA   KBAT1
07A9          CPI   h'31
07AB          JZ    FMODE
07AE          DCR   A
07AF          RNZ             ;Return if not FRAMIT
07B0          MOV   A,M
07B1          ANI   h'03      ;16MM?
07B3          RNZ             ;RET if so
07B4          JMP   WFRAMIT
07B7
07B7  FMODE:  MOV   A,M       ;FILMMODE ----------------------
07B8          ANI   h'0F      ;16 modes or 35 modes?
07BA          RZ              ;RET if not
07BB          ANI   h'0A      ;16mm or 35mm? (Vs S16 or S35)
07BD          MOV   A,M       ;Kill SUPER
07BE          XCHG
07BF          JNZ   FMODE1    ;JMP if so (Toggle it)
07C2          PUSH  PSW
07C3          MOV   A,M       ;PICMODE
07C4          ANI   h'FE      ;Kill bit 0, NORM
07C6          DCR   A         ;Preset for INR M
07C7          MOV   M,A
07C8          POP   PSW       ;FILMMODE
07C9          RAR   RLC
07CA          RRC   RLC <- RRC
07CB  FMODE1: RLC
07CC          INR   M         ;Super, PICMODE  F807
07CD          XCHG
07CE          MOV   M,A       ;Load FILMMODE with new mode. 12.16.97
07CF          CALL  SAS1
07D2          CALL  LE47
07D5          CALL  LE47
07D8          JMP   LNRATE
07DB
```

F9DE

C000

00 16mm
01 S16 - S16
02 35mm
03 1:1.85(S35)
07 LTRBX
0A PANLEDIT35
1A CIN35
0E LTR, PEDIT
10 PS, 5 mhz

1006 A8
1007 3F Source #
1008 DF AWNSER #
1009 00
100A A0
100B DD

1014 DF

20 6 FPS
40 12
60 18
80 24
A0 36
C0 48FPS
E0 SAS

C, M

B, M

01 S16mm ?
02 16mm ?
04 S35mm ?
08 35mm

02 16mm
04 S16
08 35mm
10 S35

Reprom 0 - FFF
0 - 1FFF

LRTBEED
LYNSEED FAB3

18 F77A 63354 3519 FADWN 918 — 5694
24 F99A 63898 2662
30 FAE2 64226 2140 FAUP 92D — 5893

18 F99A 1637
24 F778 2183
30 FAE2

STARTUP → 90 F8C1/F983

VERTSIZE.LST

PC100 ALT/W

90 KILL? 488
94 Right
98 Left
91 DOWN
92 UP
93 kill 1+2

4CBC

18 FAB2

USE FBC5 ++

3FA8

SUBMB: A x DE

INR H 1,800,760,KFMB
DCX H

FILMODE1
FILMMODE

```
..                                  Disk Editor
  Object  Edit  Link  View  Info  Tools  Help
0006DB90:  00 50 72 6F 66 69 6C 65 - 00 4F 72 67 61 6E 69 7A .Profile.Organiz .
0006DBA0:  61 74 69 6F 6E .. 00 50 - 72 6F 66 69 6C 65 00 44 ation..Profile.D ..
0006DBB0:  6F 41 75 74 68 .. 72 69 - 7A 61 74 69 6F 6E 00 50 oAuthorization.P ..
0006DBC0:  72 6F 66 69 6C 65 00 53 - 61 76 65 50 61 73 73 77 rofile.SavePassw ..
0006DBD0:  6F 72 64 00 50 72 6F 66 - 69 6C 65 00 55 73 65 72 ord.Profile.User ..
0006DBE0:  4E 61 6D 65 00 00 50 72 - 6F 66 69 6C 65 00 50 61 Name..Profile.Pa ..
0006DBF0:  73 73 77 6F 72 64 00 00 - 50 72 6F 66 69 6C 65 00 ssword..Profile. ..
Cluster 5,434, Sector 348,239                                 ..
0006DC00:  49 73 52 65 67 69 73 74 - 65 72 65 64 00 50 72 6F IsRegistered.Pro ..
0006DC10:  66 69 6C 65 00 49 73 4C - 69 63 65 6E 73 65 64 00 file.IsLicensed. ..
0006DC20:  50 72 6F 66 69 6C 65 00 - 4B 65 79 00 00 50 72 6F Profile.Key..Pro ..
0006DC30:  66 69 6C 65 00 45 6E 61 - 62 6C 65 53 75 70 70 6F file.EnableSuppo ..
0006DC40:  72 74 4D 65 6E 75 00 53 - 65 72 76 65 72 73 00 4E rtMenu.Servers.N ..
0006DC50:  65 77 73 53 65 72 76 65 - 72 00 00 6C 69 62 72 61 ewsServer..libra ..
0006DC60:  72 79 2E 61 69 72 6E 65 - 77 73 2E 6E 65 74 00 53 ry.airnews.net.S ..
0006DC70:  65 72 76 65 72 73 00 4D - 61 69 6C 53 65 72 76 65 ervers.MailServe ..
0006DC80:  72 00 00 53 65 72 76 65 - 72 73 00 50 4F 50 53 65 r..Servers.POPSe ..
0006DC90:  72 76 65 72 00 00 53 65 - 72 76 65 72 73 00 4E 4E rver..Servers.NN ..
0006DCA0:  54 50 50 6F 72 74 00 53 - 65 72 76 65 72 73 00 53 TPPort.Servers.S ..
0006DCB0:  4D 54 50 50 6F 72 74 00 - 53 65 72 76 65 72 73 00 MTPPort.Servers. ..
0006DCC0:  50 4F 50 50 6F 72 74 00 - 53 65 72 76 65 72 73 00 POPPort.Servers. .

.. File                                              Cluster 5,434
   C:\AGENT\agent.exe                    Offset 449,733, hex 6DCC5
```

```
..                                  Disk Editor
  Object  Edit  Link  View  Info  Tools  Help
00058430:  50 72 6F 66 69 6C 65 00 - 46 75 6C 6C 4E 61 6D 65 Profile.FullName .
00058440:  00 00 50 72 6F .. 69 6C - 65 00 45 4D 61 69 6C 41 ..Profile.EMailA ..
00058450:  64 64 72 65 73 .. 00 00 - 50 72 6F 66 69 6C 65 00 ddress..Profile. ..
00058460:  52 65 70 6C 79 54 6F 00 - 00 50 72 6F 66 69 6C 65 ReplyTo..Profile ..
00058470:  00 4F 72 67 61 6E 69 7A - 61 74 69 6F 6E 00 00 50 .Organization..P ..
00058480:  72 6F 66 69 6C 65 00 44 - 6F 41 75 74 68 6F 72 69 rofile.DoAuthori ..
00058490:  7A 61 74 69 6F 6E 00 50 - 72 6F 66 69 6C 65 00 53 zation.Profile.S ..
000584A0:  61 76 65 50 61 73 73 77 - 6F 72 64 00 50 72 6F 66 avePassword.Prof ..
000584B0:  69 6C 65 00 55 73 65 72 - 4E 61 6D 65 00 00 50 72 ile.UserName..Pr ..
000584C0:  6F 66 69 6C 65 00 50 61 - 73 73 77 6F 72 64 00 00 ofile.Password.. ..
000584D0:  50 72 6F 66 69 6C 65 00 - 49 73 52 65 67 69 73 74 Profile.IsRegist ..
000584E0:  65 72 65 64 00 50 72 6F - 66 69 6C 65 00 49 73 4C ered.Profile.IsL ..
000584F0:  69 63 65 6E 73 65 64 00 - 50 72 6F 66 69 6C 65 00 icensed.Profile. ..
00058500:  4B 65 79 00 00 50 72 6F - 66 69 6C 65 00 45 6E 61 Key..Profile.Ena ..
00058510:  62 6C 65 53 75 70 70 6F - 72 74 4D 65 6E 75 00 53 bleSupportMenu.S ..
00058520:  65 72 76 65 72 73 00 4E - 65 77 73 53 65 72 76 65 ervers.NewsServe ..
00058530:  72 00 00 53 65 72 76 65 - 72 73 00 4D 61 69 6C 53 r..Servers.MailS ..
00058540:  65 72 76 65 72 00 00 53 - 65 72 76 65 72 73 00 4E erver..Servers.N ..
00058550:  4E 54 50 50 6F 72 74 00 - 53 65 72 76 65 72 73 00 NTPPort.Servers. ..
00058560:  53 4D 54 50 50 6F 72 74 - 00 47 72 6F 75 70 73 00 SMTPPort.Groups. ..
00058570:  4C 61 73 74 55 70 64 61 - 74 65 00 00 47 72 6F 75 LastUpdate..Grou .

.. File                                              Cluster 29,069
   C:\AGENT0\agent0.exe                  Offset 381,842, hex 5D352
```

age.annenbaum.com

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1
2
8
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3
5

WATANABE CORP

ADDRESS

TLENG

2.719

PAD070.028

m 51 0 0 1 0 0 shprc 035 0 0 0 D 0 0

m 52 0 0 14 0 0 shpr 0 0 0 0 0 0

m 54 0 0 39 0 0 shpr 0 0 0 0 0 0

PAD070.028

PLAIN, GND

FE612A\ASM\FE612A.OBJ

```
f  1
1  1 50 50 50 2550 0 0
1  1 50 2550 3500 2550 0 0
1  1 3500 2550 3500 2350 0 0
1  1 3500 2350 4600 2350 0 0
1  1 4600 2350 4600 50 0 0
1  1 4600 50 50 50 0 0

f  1
1  53 0 0 0 2600 0 0
1  53 0 2600 300 2600 0 0
1  53 300 2600 300 0 0 0
1  53 300 0 0 0 0 0

m  54 4650 0 1 0 0 scmask 0 0 0 0 1 0

m  0 4450 700 1 0 0 pad070.028 0 9 1 0 1 0

m  0 3154 2348 1 0 0 pad100.050 0 0 1 0 1 0
m  0 700 2060 1 0 0 pad3pin.din 0 0 1 0 1 0
m  0 1650 2200 1 0 0 pad7mm.str 0 0 1 0 1 0
m  0 4754 200 1 0 0 padscrew 0 0 1 0 1 0

m  0 0 1 0 0 plain.gnd 0 0 1 0 1 0
```

12010

? r 1850 1900 1950 1900 0 40 50 0 0 =NOTA

? r 1950 1800 2650 1800 0 40 3401 =ISOLATED

WWW1=adult_usenet.com

SYSTEM.INI

MinTime Slice=20

WinTime Slice=10,50

ComIn FIFO=1

ComBuffer=1024

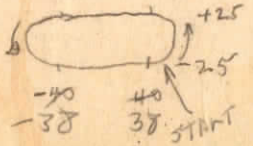
2800 1940 2800 1640

~~7150~~ ~~3760~~ -3100 -3800

WINSOCK.dll

911_K1

SCMASK



Robert Norton TiceRTice@pop600.gsfc.nasa.gov

3/7 -50 www.hasselblad.se/the_company/space_camera.html

3/6 -270

Kopper region #

region #

Copper to copper spacing

Layer # 1 or 2

K 1 2 0 1 0

XTPRO 13109

CONTROL PANEL -CD- YAHOO - JSTEP007

GEARY RODRIGUEZ F: \WINDOWS

egr8owow.fun Need service? EMAIL him.

```
(BR)
(BR)
(BR) (a href="mailto:info@stephensaudiovideo.com") (IMG SRC="images/emailanim1b.gif" width="80" height="24" BORDER="0") (/a)
(BR)
```

1500

IF: error - CONTROL PANEL - 386 Enhance ICON

Ir21.dll - IR21_R

Ir32.dll IR30

indeoV.drv

```
(/font)
(/BODY)
(/HTML)
```

Shut off FAT32

Virtual memory Delete Create Done

Boot MANAGER

INFO@STEPHENSAUDIOVIDEO.COM

</B></CENTER>

Does your FDL60 need service

```
(!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN")
(!-- saved from url=(0037)http://www.zyrak.com/fdl60/index.html --)
(HTML) (HEAD) (TITLE) FDL60 (/TITLE)
(META content="text/html; charset=windows-1252" http-equiv=Content-Type) (!-- Created with the CoffeeCup HTML Editor++ --) (!--         htt
(META content="FDL60 telecine upgrades and modifications" name=description)
(META
content="fdl60 telecine maintenance upgrades  and service , service , upgrades , fdl60 , Fdl60 telecine , Bosch fdl60 , Bosch fdl60 telecine , Bo
name=keywords)
(META content="Microsoft Frontage 4.0" name=GENERATOR) (/HEAD)
(BODY bgColor=#404040 link=#F0F0FF text=#10D0FF vLink=#E000A0) (FONT
color=#2f11fb)
(B)
(P)
(CENTER) (IMG src="images/jfs1clp.gif")
(P) (/P) (/B)
(/a) (/FONT) (font face="japan" size="5") The past seven years have seen
extensive work done on the FDL60 by John Stephens. He will be offering
Super 16mm and 35mm upgrades for the FDL60 Series Telecine, as well as
other improvements.
(P) John Stephens has become a legend in the Recording Industry due
largely to (I) his designs (/I) of the (b) analog multi-track (/b) recorder.
(P) It will be interesting to see what he does with the FDL60. (/FONT) (a)
(/P)
(CENTER) (FONT face=Arial size=4) This Site is currently being updated  (/FONT) (B)
(P)
(A href="mailto:info@stephensaudiovideo.com") EMAIL (/font face="Arial"size="10") (/a)
(/B) (/CENTER) (/FONT) (/BODY) (/HTML)
```

for the past seven years JS has been researching & developing upgrades for the FDL60

480

Bal 322.59

- index -

ANAplus.gif

ANALog.gif

fdlplus.gif

jfs1clp.gif

preamble

chg

images\stephens.gif

images\elect.gif

icon\felixanm.gif

URL

$ .NET/webtrends/

50F/50F.HTML

GIF

~~Body~~ - MEAU

791115 21:33 195A

GIF

MULTPLUS √MULT

√AUTOPLUS √AUTO

√SEPLUS √SE

Stephens

√ANALOG

copy

SRC = "images/ .gif"

C:\ACROBAT3\READ16\ACROARD16.EXE

</Body>

</HTML>

C:\ACROREAD\ACROREAD.EXE

PAGE HIM

See "The sixth sense"

00293-03.PDF 03-32-00293-02

27/8/98 04.PDF 11--01

MILL-MAX 317-93-108-41-005

0.070 X

QII FROM ---

1193.80

17289.20

1800 FOR ONE RATE, COM

EGS

-DSL-

Site submission service

-9.95-

- Logfile anal -

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3461

John still supports

All of his equipment

Though much of his design

CTRL V

611 -

Including equipment

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USBI - AT&T 7¢/min - 2"

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B3 | 179 + tune

C4 - 196

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B central

Microsoft B central

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207.222.16.127

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- AND BEYOND x599

hair growth - 3383

1.800.387 3383

888

support

TANDY.COM

3:1

- 8:1

270-720ft/hr 235/hr

A1c0004.chk \dc\dmee

AN1736

02bf1.pdf

www.radioshack.com

NDD/COMPLETE

Rain Cruel

C:\>

original file - 6609A.TIF

6000 X 6111 → 1500 X 1528 24 X 11

12 X 5.5

<HTML>

<head><TITLE> CARRIE'S PAGE </TITLE>

John Biden

WWW. SOTAINSTRUMENT.COM

SOTAINSTRUMENTS.COM

6609PIPE.TIF 1,330K

6610PIPE.TIF 1,741K

</html>

760.599.3225 - About John Rapport

x2

~~Sharpen edges~~ IIII

unsharp mask 150/.2/0 @ ≅ 700 pix

unsharp mask 400/0.2/0 @ ≅ 1420 pix

" 500/.4/0 @ 5680 pix

P

s edges

sharpen sharpen more

III I

www.FreeDSL.com

6611 a2.TIFF → 6611a19d.TIF

File Edit Search Options Help

CONFIG.SYS

```
rem DOS =HIGH,UMB
rem DEVICEHIGH /L:1,39568 =C:\DOS\DRVSPACE.SYS /MOVE
rem DEVICE=C:\DOS\HIMEM.SYS
rem DEVICEhigh=C:\DOS\EMM386.EXE NOEMS
rem DEVICEHIGH /L:1,12048 =C:\DOS\SETVER.EXE
rem DEVICEHIGH /L:1,23888 =C:\CD\ATAPI_CD.SYS /D:SONY_000
rem DEVICEHIGH=C:\dos\ansi.sys
rem FCBS=4,0
rem LASTDRIVE=K

REM DEVICE = C:\PCKWIK\KWIKBOOT.EXE
rem DEVICEHIGH /L:1,25440 =C:\MOUSE\MOUSE.sys
rem device=C:\windows\emm386.exe noems X=D000-D7FF
rem I removed "I=B000-B7FF" in the above line.
rem INSTALL=C:\DOS\SHARE.EXE
rem *REM device=\Z80CPU\UniForm.SYS
rem DEVICEHIGH /L:1,9664 =C:\PCKWIK\KEYSAVE.SYS (**WONT WORK HIGH**)
rem *SHELL=C:\DOS\COMMAND.COM C:\DOS\ /p
rem DEVICE=C:\PCKWIK\PCKRAMD.SYS
rem SHELL = C:\NDOS.COM @C:\NORTON\NDOS.INI /P

DEVICE=C:\WINDOWS\HIMEM.SYS
Shell=Command.com
Files = 50
Buffers = 20
STACKS=9,256
rem [common]
```

648

6611A2SM.TIF

2942K

DV Gerber gcpcook.TXT

ANSI -

86

+180

~~+270~~

+90

213792 bytes

23,578

3,879K

6611b.tif

6611bsm1.tif

LINK

3 POINTWARF @ north.NET

Jack Spencer

FDL90 - 323 960 7584

6611

E:\NASA\APOLLO\11\

15 1.45 778

6611PI^2.JPG

AGUSIK ...

caused ... in

module ... at ...

512.408-3020

X17C2
X17C8 L4203 VSYNC
X17C6 L41FD HZ300
X17C4 L42AD FLMSTP
L26B0 FCINT ; FRAME COUNTER
X17AC L7177 KEYBD
X17A4
X17A6 .EQU CPUE4
CPUE5
X17A8 CPUE6
CPUE7CT h'E7
X17AA CAP20 21
CAP22 CAP23CT
X17B0 E198 = DECMODE(R9)
P125, 247
X17B2 P126
P128 27CT
X17B4 PS3A 29 2BCT
X17B6 SMPT40 h'40 41?
X17B8 SMPT44 42?
SMPT45 h'45
X17BA
PS3BCT
X17BC PS3C
X17BE PS38 I-CAP21 O-PS3C
X17C0 PS39 I-P124 O-45
PS3A O-P127CT 1/0-40
X17AE I-P129
X1782 I/OUT 08 O-P12A
X17EE I/OUT 09 O-P12BCT
X17C0 1-PS38
0-PS39
0-PS3A
L1A1C - CAPOUT ;*CAPSTAN SPEED* 1/0 40 -
L1A53
L1A40 - CSPD2 CAPSPD
L1A4A - CSPD3 - PS3C -
L1A53 "Y" CAP22
L1AB0
L1ABA
L19CC - CAPSPD 34FB
L1AB6 - CSPD1
E705D RESET
L7071 SET

DAVE SARGENT
800.9CT.4287 X 725

CPUE4 0/1
E5 0/1
E6 0/1
E7 0
EC 0/1
ED 0/1

3100

E198 DECKMODE (DKMODE)
E0BC FLMSPD1
E007 FILMMODE
E008 FILMODE1
E13
E3D: DRL
ED6 FRDWN
EEB FRUP
E7E FRITE
EA1 FLEFT
F0B N35MM
FD0 LMPON
EC6 RTN1
1441 T1441

E00C --- F809 MINIMODE
L418F LMPFULL
LEC4 - PRTN
E198 - DECKMODE
ED5
E10F - KDAT3

E00A = PICMODE
E143 = REELMAX
E13F = CAPRAMP
E148 = TACADIV

X3253
74C = LNRTE ??
L524 = HORXT
598 = TIMER0
59C = " 1
59E = " 2
5A0 = " 4
EAFD = LMPFUL
46B3 = TIMER
46B5 = TIMR1
46B7 = TIMR2

A1: 53C0
A2: 5455
418F

WHAT ARE
E10A
E10B

800.869.3557
* ATM Deposit
WD4Z600B072

E194
E193
E195
E196
3870

BOB DAVIS
257-6500

```
07A0 1107F8          TELE:   LXI   D,PICMODE  ;F807 ------00 16mm--------20  6FPS
07A3 2105F8                  LXI   H,FILMMODE ;F805       01 S8         40 12FPS
07A6 3A78FB                  LDA   KDAT1                  ;02 35mm      60 18
0709 D631                    SUI   h'31                   ;03 1:1.85    80 24
07AB CAB707                  JZ    FMODE                  ;07 LTRBX     A0 30
07AE 3D                      DCR   A                      ;0A PANEDIT   C0 48
07AF C0                      RNZ   ;Return if not FRAMIT  0E LTR_PEDIT  E0 SAS
07B0 7E                      MOV   A,M                    ;10 PS,5mhz
07B1 E603                    ANI   h'03    ;16MM?         ;1A CIN35
07B3 C0                      RNZ           ;RET if so
07B4 C34C11                  JMP   WFRAMIT
07B7
07B7 7E              FMODE:  MOV   A,M     ;FILMMODE ------------------------- 01 S16mm
07B8 E60F                    ANI   h'0F    ;16 modes or 35 modes?             02 16mm
07BA C8                      RZ            ;RET if not                       04 S35mm
07BB E60A                    ANI   h'0A    ;16mm or 35mm? (Vs S16 or S35)     08 35mm
07BD 7E                      MOV   A,M
07BE EB                      XCHG
07BF C2CB07                  JNZ   FMODE1  ;JMP if so (Toggle it)
07C2 F5                      PUSH  PSW
07C3 7E                      MOV   A,M     ;PICMODE
07C4 E6FE                    ANI   h'FE    ;Kill bit 0, NORM
07C6 3D                      DCR   A       ;Preset for INR M
07C7 77                      MOV   M,A
07C8 F1                      POP   PSW     ;FILMMODE
07C9 07                      RLC
07CA 07                      RLC
07CB 0F              FMODE1: RRC   ADD h'38
07CC 34                      INR   M       ;Super, PICMODE
07CD EB                      XCHG
07CE 77                      MOV   M,A     ;Load FILMMODE with new mode. 12.16.97
07CF CD6D49                  CALL  SAS1
07D2 CD470E                  CALL  LE47
07D5 CD470E                  CALL  LE47
07D8 C3EC07                  JMP   LNRATE
```

VSIZE = FBFE

KDAT1: 31 = FMODE
32 = FRAMIT

35mm = 08
CIN35 = 40

589

5DF

//service, capitalone.com

DAILY NOTES 74-75

12-13-74

AMC - JEAN PETERSON 2:03 PM - WENT HOME ALREADY

~~I~~ SHOULD CALL HER MONDAY MORN.

AMC - LES JOHNSON 2:08 PM THIS. 997-6100 NA
HOME 389-7512 NA
He called & I TOLD ABOUT BOUNCED CHK. - ~~I~~ will call him soon. NXT WK.

Reid call JACKSON BAKER 2:18 - IS BUYING MCI.

Relap heads? $450.00 WANTS TO KNOW IF I can LOOK AT them.

I will call him MONDAY.

12-14-74 PSA 6:00 PM - 471 6:55

12-14-74 LEON RUSSELL - RETURNED HIS call. He will RETURN IN 1 HR.

I should call him. (2hrs) 1-918-742-9332

12-14-74 Chris Skene 271-9880 - 271-9829

call him SUNDAY ABOUT Repair of record dropout,
Bias Reg.

12-16-74 LES JOHNSON - Meet with him Wed. ON pickup of 40 TRK Heads & Delivery SKED. of 24 TRKS this Mo.

DEAN ACHESON - WANTS Diag.
TOLD HIM Delay of 4 TRK WK JAN 14
WANTS SET of SHUTTLE CONTROLS - LESS BOX. -

12-16-74 JACKSON & MRS. BAKER - CHK heads TONIGHT - call first 469-5103
Delivery by 2ND WK JAN - for a 24 TRK.

12-12 - BRIAN RTN. call 3:09 - WANTS TO PAY OFF ALL IN FEB. INCLUDES 8 TRK, 14 TRK + 2
2/24 TRK. NOS. - 2 - 24 TRKS -
Bias NOISE - will see him TONITE.

12-16 RON RAKON - BOB Lear "GRATEFUL DEAD"
WANTS TO RENT 2-3 WKS - JAMES J. Dollard 617-434-4192 Ref. CHK.

12-16 "DAWNBREAKERS" MIKE OBX 216 - CHAN 18 WON'T STAY Record.
361-6173 REPAIR IN MORN. MARK JOSHI - HOME NO 361-5596 BRING Shields for MOUNTS

12-12 CRIS SKENE - I called them, will call them by 4:30 PM.
12-12 4:35 JOE EATON - RTN call - MARY ANNE will call me - IKE TURNER 16 TRK DOWN.
12-16 4:41 called CURREY CONST CO. - CHRIS DUNN 888-6800 said I would send them MONEY AS SOON AS I GET SOME.

1 - port 8' 2" with Battery pack

16 THK Head ODD THK - 3M 79 8 TH $11700.00

1 - 16 THK head 650.00

1 - Remote control 250.00

1 - TV SYNC UNIT - lock color vert. SYNC 500.00

1 - Carrying Case N C.

$13,100.00

order D-11846M3943K

1-15-75 promised

Air Time 2-1-75

12-16- 5:30 Chris Skene RTN. call — Lifter doesn't work in stop. Bias Reg. Sync Relay Failed

12-16 11:30 Gary Stouffer RTN. call Both machines NOT Locking in Speed, Meters NOT Reading out. RM FLYING TO S.D. IN MORNING.

12-17 1:55 MR. HAINES 825-7915 RTN. call Re UCLA Letter 12-12-74. I will Accept the deal & TOLD HIM SO.

12-17 2:32 Rob. — 457-3445 Carol wants me to call him. (Village) Problem with New deck Machine — Bias Reg. Call him when fix is found.

12-17 2:45 Ken Ohara 640-1068 — wants Distributorship in Japan, may have a sale. Central Trading Co. 999 N. Sup. Blvd. Suite 314 Elsungo 90245 I should call Goneen & check with them & then call him back.

2:50 Gary Stauffer — 714-415-9997. DAVE ELLIOT — Bookkeeper He will come up Wed. to see me,

2:55 Barbara (415) 457-4220 Call Her on Air bill No. (Round Records) & When sent.

4

4:05 AMC Jean Peterson. TOLD HER THAT Cashier's Chk. will be mailed today.

4:12 Jim Rittenhouse - Time Code Gen. won't work into Lo Z Load, will send it to us when possiable.

4:16 846-2655 - Russ - wanted to know about us paying him the money we owe him on Fri. as promised. TOLD him to clean his dirty floor in back He will tomorrow morn.

4:20 Hollywood Sound — Jess PUNCHOUT POPS & WOW

4:22 Ed Klien — 887-0066 Muntz T.V.

4:45 Ron @ Round Records — want me to come up to close deal on 16trk Machine & deliver 16trk Rental. RM leaving on 6:00 pm flight

4:55 AMC Jean Peterson — Rick — Doesn't want to play. Wants Cashier chk.

12-18 9:54 Jessie Hodges — PUNCHOUT Noise & WOW. TALK TO DAVID When I have info on Delivery of Machine.

1:35 Les Johnson — Will bring 40trk heads tonite. Is checking on the 16trk orders. Can deliver 2 - 24trk sets in 2 wks. Will call back.

1:52 Les Johnson — Price on 40trk heads — he will call back.

2:01 Called Les Johnson & told his secty we found price of 40trk Nos.

2:07 Les Johnson Called & will be here by 7:00pm with 40trk Hds.

2:19 Mike - DAWN Breakers WANTS PUNCHOUT While in play. Rewind started spilling Tape in rewind. Will call ~~him~~ TOM as to when I'll be over tonite.

12-18-74 2:53 Terry MAMA Toes - Chuck Johnson is sick. Will meet with me here 12-19 @ 5:15PM.

1 3:22 MR. Mouri Kawa 622-2021 622-7389 - WANTS further INFO ON 40 TRK. S/N, I Will CONTACT Leon Russell - what ALBUMS were recorded on 40 TRK. WAS TOLD that MR. O'Hara of Central Trading Co. IS A "Pirate".

10:30 Tried To call DAWN Breakers - NO ANS.

12-19-74 DAV - LO MODULES

12-19-74 10:07 Bill Peoples RMC - Can't LOCATE 1ST bounced CHK. Somewhere between banks. I will CHK & Call him. - Chris called him & TOLD HIM BUT bank doesn't have it, which is the truth. HE WILL CHECK WITH THEIR BANK AGAIN

10:12 Lillian Johnson A/A ASKING ABOUT MONEY I OWE ON MY ACCOUNT.

1:22P DON FISK Brigham young UNIV. 801 374 1211 X 4151 - SUPERVISER of Video MOTION PIC. of Foreign Lang
DATATRON EDIT SYSTEM - 10-12 WKS. - 4 TRK 5200.00
16 TRK. - 17,500.00 + BLACK BOX TO CONVERT SMPTE TO VERT. Drive MAGNETEK 1ST DATATRON SYSTEM TO be INSTALLED IN 3 MONTHS.

2:26P

5:56 TOM KNOX - ~~WANTS~~ plans To order 2-40 TRK., 1-4 TRK ALL WITH Standard SYNC PANEL. 3 Remote shuttles. 2-Search UNITS, 2-2" EDITING BLOCKS, 2-Lim/D'ser

6:35 Greg Pine 615-385-1760 ALASON Research, LEFT for the day.

6:37 Gerry Stauffer - DAVID ELLIOT 415-858 (714) Bookkeeper - Clifford II 714-463-6509 Talked to him. He will chase down all checks tomorrow Afternoon & Call me.

6:46 Called Jackson Baker 469-5103, TOLD HIM, with agreement, that he will have his heads by NOON TOMORROW.

6:49 Called Ken ohara - Central Trading. 640-1068 NO ANSWER.

7:38 TOM KNOX - WANTS Tape LIFTERS TO LIFT Higher. We Agreed that I MAY AM going over there ~~Wed~~ SAT. MORN. He will call, first.

12-20-74 11:43 MR. O'Hara Central Trading Co - NOT IN ~~yet~~ He will call back. 640-1068

11:45 Jessie - HOLLYWOOD SND. 465-6121. WANTS 16 TRK Repaired, I will pick up. To be returned Monday. WOW & Speed problems.

11:49 Jackson Baker 469-5103 I Have Heads & will Deliver by 12:15.

11:50 Greg Pine 615-385-1760 I called, He's NOT IN. He should call back.

11:54 JACKSON Baker called Re: PARKING ON GREEN
2 3/16 4 = 764-2360

12-23-74 CLO MR. MORIKAWA – 622-2021 Gave him INFO – LEON RUSSELL "STOP ALL THAT JAZZ"
11:00AM WANTS CROSS TALK & MORE ACCURATE NOISE FIGURES. TOLD HIM, I SHOULD HAVE INFO BY JAN 5.

11:42 A Called PAUL BEAVER @ 462-3311. NOT IN.

11:53A Called Clifford STAUFFER, 714-297-4321 (~~Chev.~~) LEFT word for him to call me.

12:05 PAUL Beaver RTN. call, said there should be no reason that we haven't received the money yet. He will check on it.

BRIAN – PARAMOUNT WANTS TO KNOW WHEN 24TRK. Will be Ready? WANTS IT BY JAN 15TH, TOLD HIM I'd TAKE HIM OUT TO DINNER.

1:28 Called TERRY @ Fredy Pero 982-0305. I INQUIRED about CHUCK JOHNSON, she will call back when she has INFO.

1:30 Called Joanne re: MY Flight. – I'LL READ OUT & DRIVE TO OCCIDENTAL TO MEET HER @ 3:00PM

1:40 Called FRONTIER AUDIO – 214-690-0055 – JANET TOLD her ARRIVAL TIME, She will pick me UP.

5:16 MR. MORIKAWA – MR. TOMEKA WANTS 40TRK & WANTS MORE DRTR. WANTS BY END OF MONTH.

12-24-74 11:04 Called Jean PETERSON – AMC – TOLD her THAT $1502.00 check bounced BUT IS NOW GOOD. She will send IT back THROUGH.

11:09 Called LES JOHNSON – Dianne paged him, BUT couldn't find him. She will have him call back.

12-30-74 11:47 Billie WOLF – Grateful Dead WOWS @ SPLICES. HOME 415-868-1078
Should call AT WIEN 415-388-2662

12:00 I called CURRY CONST. CO. 888-6800 – OUT TO LUNCH.

1:32 I called " " Betty – she will call back. TOLD her furnace was out.

1:38 Betty Called back & said Gill? IS OUT of office BUT will call me as SOON as he returns

1:45 Rec. call – TOM Harvey. AUDIO RENTS would like NO of days TO bill IN December. He will call TOMORROW TO find OUT.

2:48 MADILAN Backer (Jackson's wife) $17,500.00 QUOTE – ON 18TRK Delivery IN Feb. WANTS ONE ASAP

3:14 JIM RITTENHOUSE called 614? – ~~How is~~ When can we supply a resolver – how much? 870-6011 With peak reading meters.

3:52 Bill Wolf – Wanted TO KNOW when he could expect me. I said about 7:30PM.

4:00 Leo HULSEMAN Called Wanted TO KNOW When 40TRK INST.? I said I'll pick up Machine TUES. & RETURN IT THURS. LATEST. TOLD him board would take 4 days TO COMPLETE.

4:03 BETTY @ CURRY CONST. said we will have to handle it.

12-30-74 5:02 MR. Morikawa called. IKE will be here ON 1-7-75 with a MR. SUGANO, in CHITA, WANTS 4 TRK with 14 INCH reels. TOLD him I will have more data by Wed ON the 40 TRK.

12-31-74 3:32 PAUL Beaver, NO FAST FWD or REWIND, I will see him @ 5:00 PM. 384-0458.

1-2-75 2:11 called JACKSON BAKER 469-5103, He wasn't IN. He will call me.

prox 1:30 Greg Hanks called 463-2371. wanted job. I said NOT for at least a month.

2:31 Alen Byers called. Asked if there was anything they could do about the damaged 16 TRK cover. I said that I was handling IT.

2:34 Mike Frazier - meters bang when reel is dropped onto reel hub. DAWN Breakers.

5:03 called Mr. Wessel 843-0944 Will cost Approx $450.00 for INSTALLATION. HEATER MAN.

5:06 JONI said she would STOP SMOKING!!! IT will ONLY cost me Approx $300.00 to send her to "Schick" for training, She will pay it back by Stephens taking $5.00/WK. OUT of her pay check.

5:12 called Beverley @ EVANS STATIONERS 842-4148 & told her we would to mail out a check to her tomorrow. We owe $209.66.

5:16 called Brian @ paramount 461-3717, wants to know how much will the 24 TRK heads cost. 24 TRK. is needed by JAN 18 TH for 9-10 days & then 2 WK break & then needed forever.

5:23 JACKSON BAKER called looked @ one of the new studers. I said I would sell them @ 24 TRK, set up for 16 TRK only for under $20,000. " " " " take them to lunch tomorrow if they would see the 24 TRK here.

5:41 Peter Hilton — meet him monday nite

5:49 Peter Bergren — Paul Beaver wanted to know when machine will be ready. I told him tomorrow afternoon.

7:35 PAULA called & asked for meeting with her. We agreed to meet at the Castaways @ 2:00 PM FRIDAY.

1-3-75 2:05 Hollywood SOUND wanted to know when 16 TRK will be ready. I said I would call them back at 3:30 p.

4:00 I called Hollywood SOUND & said 16 TRK won't be ready UNTIL MONDAY.

4:03 called Rod, We WANT 3 MANUALS ON SMPTE GEN. & Reader. (LOST)

debbie - triple Pisce

Call - Fri - nite date

C. West - 849-7588

1-7-75

10:07A Called Mike FRAZIER - DAWN BREAKERS 361-0173. Channel # 18 ~~doesn't~~ didn't work yesterday, but works NOW.

10:10 called Ken @ Village 478-8227 NOT IN.

10:12 Called RONDHA @ BOLIC — TINA WANTS TO SEE ME @ 3.00 PM @ BOLIC.

10:31 called " " — Agreed that I will call her when I'm ready to come over.

1:38 RTN Called SUSAN STRASBERG 271-5484, will call me next week about INTERCOM. 3-STATION. CHK. @ Electronic City.

1:40 FRONTIER AUDIO called. Want FIRM date on Deliv. of 4TRK. by 10th.

1:41 Ken Village - Problems. Rewind to play problems. Tape TENSION SCAN ~~light~~ LIGHT is OUT.

3:22 Called JIM RITTENHOUSE 870-6011. Series # MZ3 is the OLD tapedeck type.

3:34 Called PETE at SOUND Labs. 466-3483. Wanted to know about moving record head further into tape path on 24 trk will call back.

3:58 BILL BLUE called. Said a shorted 1.0 mfd cap was part of his problem.

4:06 called TOM HARVEY 870-6011 for padre. Cabinet maker's name? He will call back. Name is GARY BONAR 347-9473

4:11 called Brian 461-3717.

4:14 called Tom Weir - Wants to rent 8trk. Prices on renting & leasing.

4:21 called Dave Schweninger 883-8733 NOT IN. will be in at about 6. PM.

4:37 Bolic SOUND called, TINA wants to see me now. I'm going there now.

6:34 JUST Returned from Bolic. TINA WANTS ME TO oversee their operation IN the technical area. I will do so for $50.00/hr. PORTAL to portal Charge for Today $100.00

1-8-75

11:56 RTN. call to BRIAN @ PARAMOUNT 461-3717

1-9-75 — 4:45 PM. — Has ordered 1-8ZIA-104-24TRK with 16TRK Heads.

JACKSON BAKER AUDIO ARTS — CAPITOL RESERVE FINANCIAL CORP.
8300 SANTA MONICA BLVD. LA. 90069 656-4300
- William Rogers -

7:14 called TOM KNOX 361-0173 — N.A.

RETURN spoke TO PAT'S. WIFE.

1-6-75

12:21 called TOM Harney 415-387-7199 INTERESTED IN 8 TRK. CONV. TO 16 TRK. N.A.

12:22 called Richard Kelz 783-7366 " " 16 TRK. Allegro SOUND. ANS. SERV. found series 23 for $6500.00 - "IS A TALKER" I QUOTED him 9500.00 WITH the OLD 3-M DECK we have. He WANTS something around $6500.00.

12:47 called HOLLYWOOD SOUND TOLD JESS I will TRY TO GET IT TO HIM. by 2:00 PM. (The 16 TRK)

12:56 TOM Harney called.- HUN SOUND. WANTS 16 TRK Machine BUT SETUP for NOW for 8 TRK.

1:19 JACKSON BAKER called. WANTS PRICES ON 24 TRK. $25,000.00 1-16 TRK HR 3350.00 - WANTS PRICES ON 24 TRK. BUT WITH 16 TRK heads & ELECTRONICS.

1:41 ~~called~~ TOM ~~Harney~~ OLIVIER called. IS INVOLVED WITH 16 TRK from Village Bias Reg. Problems. WANTS help, I cooled it a bit. TOLD him I'm working on the problem.

1:57 called TOM Harney - BUSY

2:03 Deany LAYMAN from ROUND RECORDS called. ROUND RE Box 1166 San Rafa 94902 ATTN. Gave INFO to Carol to DO. Paid for BY ANDY

2:08 BUSY - TOM Harney

2:19 called JACKSON Baker 469-3103. Gave HIM prices of 24 TRK WITH 16 TRK capability ONLY for 21,870.00. I ALSO said if the PRICE IS TOO high I would sell IT TO him for 20,000.00 as agreed earlier.

2:22 TOM Harney called. I QUOTED price ON 16 TRK WITH 8 TRK ONLY CONV. TO 16 TRK @ 15,200.00 He said TO MUCH & I SUGESTED him BUYING an 8 TRK for NOW & Trading IT IN for a 16 TRK later.

3:02 LEO HULSEMAN TOLD him Machine will be ready TOMORROW.

3:06 called ROD STEPHENS ~~BUSY~~ 870-6011, Rod Talked TO PAUL DUNCAN IS INTERESTED IN SYNC SYSTEM project. When CAN we MEET. He will call back.

4:33 called Bill Elder 656-2866 spills Tape IN REWIND. I will PICKUP Machine, I will call first

4:38 called TOM Harvey 870-6011. WANTS TO SEE me during the day.

1-9-75

11:30 Terry @ Mama Joes Called. Meeting with Chuck Johnson @ 5:40pm Friday.

2:41 Called Tom Knox -361-0173 - machine was wowing the other night, would like me to come over to see it. Track 18 won't stay into Record once. Increase tape lifters hight. ~~Call him up Mon~~

3:26 called Jackson Baker 469-5103. Cabinet height 30" high. Wants us to come over & check out cabinet ideas.

5:41 RTN Call Frontier Audio 214-690-0055. John Re: Delivery of 4 trk. Customer wants machine by 18th. Re: Sand blast of motor shaft 50¢/shaft.

4:37 Called Bill Rogers @ Capitol Reserve financial Corp. 656-4300. He will be here at 11:00 A.M. Friday.

1-10-75

12:39 Brian Cornfield - Everything Audio - wanted a 24 trk for rental by the 24th of Jan for 6 wks. I said no.

3:11 RTN. Call - Bruce Morgan - Electra Records 655-8280 - wants a 24 trk Needs by Feb. 1st 1975. I am will to pay rental on a 24 trk until their machine is ready.

5:40 Jackson Baker called - will send $500.00 toward down, I told him delivery will be Mid Feb.

1-13-75

Bruce Morgan called on 1-10-75 - Expressed interest in buying machine. 655-8280

11:34 Bill Park - Electra Records Asked about buying system for 24 trk (search & find) will call in next couple of days about order.

1:37 Moricaya talked to Oliver 400R system. 874-6413 (tape search) for 1143 N. Poisentia Dr. Hollywood 40 trk. system.

1:50 Tom Knox - told him I'll be there at 3:00pm. Meters jump when deck is bumped, ~~Play~~ Rewind to Play - Tape lifters drop, Delayed on #21 chan, 18 won't stay in Record. #17 won't Rec. Light. Chk wow.

3:10 Freddie Perro. - Editing Blocks, Plug in preamp ~~for~~ To Replace sync relay. for Dual playback. Wants two of them. I will call back when we call him. 7th 16 erases but does not record. - Call Bill on when I can see him.

5:33 Freddie Piro 982-0303, wants to send in 24 trk. for Bias changes, will deliver thurs. Nite about 6:30 P.M.

5:38 Bryan 461-3717 - Don't need the 24th trk until the 1st. frequency response problems. - Carrie is complaining, 100~ Bump.

1-14-75

Montrose - Bowling Alley Tues, Honalulu 9:00 A.M

9:00 PM - 134 / Glendale Blvd. Pancake House 213-982-6100

DAILY NOTES

1-21-75

12:14 JOHN ELDREDGE - 4TRK when going into record
214-630-1262 Call him when free.

8:57 Gary Stauffer - V.S.O. SYNC LOCK + BATTERY PACK
? 5'00 00 - DAYTSON
? 2480 00 - DAWN Breakers
4000 00 RENT
SAID He will be up to see me wed. To clear up the Bookeeping.

5:01 Gary Stauffer - Vert Drive - is going to deliver machine tonite.

6:07 Jim Jordon 464-7391 TTG Recording. Wants me to see him.
ABOUT A machine. NEXT week. - working with Gary Stauffer
Compact VIDEO - 843-3232.-

1-22-75

9:04 DICK VORHEES worked up $5000 00 : $10,400 00 DOWN. with 3 YRS. Bal.

9:13 Steve Mitchel - Compact VIDEO - working with Gary Stauffer

9:38 MR. Moricawa WANTS TO see me SUNDAY 11:00 AM.
Will call

10:31 SUZAN Strasberg 4550 DENSMORE AVE. 1 BLK W. Haskel
1/2 SO. VENTURA 1.00 P.M. SAT.

12:25 Jack Caskin 475-4987

1-24-75

10:50 called John Eldridge - OUT TO LUNCH. He will call back 1.00 PM 47000

11:28 HAZELEN 1662, 1812 -

JOHN Eldridge - STATUS of REMOTE CONTROL ON 24 TRK.?
-Serial 1023 -
WANTS B/W Glosies for paper.

1-28-75

10:30 - Geo SMITH - SCIENTOLOGY Re 16 TRK & 4 TRK, IS COMING IN This Morning.

JOANNE - RATS 347-8558

2 STOLEN YJIAC

1-14-75

11:05 DOUG OLIVER - OLIVER ENGINEERING. WILL MEET WITH ME @ 2:30 PM

11:10 WANTS A 20 TRK. AUDIO Recorder, 802-988-4401 Bob Zelift, Space Research Corp. 15/16" or 1 7/8" - WITH TIME base. SMPTE & FT. $10,000.00? 4 MO. I will call Back Thurs, With more INFO & Maybe a better price,

11:28 JACKSON BAKER - Will RETURN call

DICK VORHees - UNITED WESTERN. INTERESTED IN a 24 TRK. will build his own. We will ~~build~~ sell him an old 3-M deck for 2000.00,

3:43 LEO HULSEMAN - will have his 40 TRK by THURS.!!!

3:45 ED COBB - WANTED TO KNOW when Machine will be ready? I said 1½ hrs.

3:50 HOLLYWOOD SOUND JESS WANTS his Machine!

5:40 CHAN'I NO OUTPUT -

1-15-75

5:19 TOM HERDON - Late

5:25 GREG PINE - NASHVILLE - CROSSTALK? WANTS a Machine back there 615-356-7462 FOR EVALUATION - IN 1 MONTH.

6:29 ALLEN BEYER - WANTS a 16 TRK for TOMORROW MORNING.

1-16-75

3:00 JEAN PETERSON RMC -

1-17-75

12:36 DICK VORHees - ASKED ABOUT MOUNTING 24 TRK ON OLD DECK. I SAID NO. HAS IDEA ON a NOISE REDUCER.

12:49 JESSIE - HOLLYWOOD SOUND - 24 TRK

3:04 BRIAN 461-3717 Δ - 100~ @ 30 IPS. 6:30 PM

~~4:30~~ TOM KNOX 365-9371 office, 361-0175 STUDIO. Delivery sometime
5:15 NEXT WEEK FOR 24 TRK Repair.

5:24 BRIAN - WANTED a 24 TRK for TONITE.

1-21-75

11:43 BRIAN

11:47 JOHN HARKIN - LEON RUSSELL -

11:54 MR. KOVARI - 212 247-8300 X2672 DEC. 13, 1974 8 TRK 2" $14000.00 PROX.
FEB. 1ST P.O.

1-31-75

4:28 – MR. Shpall 674-8807 – wanted to know about letter. I said I would call him back when Cris returned.

4:31 – Gerhardt 678-2637 call him when I'm free this weekend.

4:36 – Track 29 OUT – ON Leo's Machine. (Record.)

4:46 John – I.O.U. $10 for gasoline – Joni

5:21 Peter 9:00 PM his place.

6:55 JOHN ELOREDGE

1-3-75

1:00 Pete Bickeldike 843-3232 Compact Video Systems. wants Lit. also wants info on SMPTE Time code Gen. & Vert. Dr./SMPTE.

1:10 Wes Dooley 449-1705 – is Recording in Ambassador

1:14 Pat Golden State Recorders wanted INFO on how to Lock on channel INTO SYNC. Also what the "pre" does.

1:23 Don Green 764-2360 – 24 trk. Too Late. Send Catalogs to him. 1090 12210 HART ST. N.H. 91605

1:30 Lally Johnson 462-9181 will send info on his sales idea.

1:37 Doug Oliver 874-6463 Wanted to know status of 40 trk order. I said its not moving yet.

2:28 ANDY – Criterion – 8 trk for Wes Dooley – I said I will be on Call – Asked if Searchunit will be ready in Next 2 Mos.

2:38 Wes Dooley – Concert Wes. Nite. @ 8:00 P.M. – 495 ELLIS Pasadena.

6:22 MR Morikawa will be in @ about 11:30 to pick up DATA sheet. ON 40 trk Machine.

4:00 PM Paramount Chase Mellon - 272-3388
4:30 PM Bill Schpall -

HADAJAN - 11:00 AM 3-13-75

2-10-75

11:20 DAVID Harrelson - Hollywood SND 485-4121 wanted to know when diags. on 821 SYNC panel will be available. I said They were being printed up. wanted to know when I could check the wow in the 16 TRK. I said I would be over today.

11:24 Brian 461-3717 No money yet.

11:28 Bill Spkall 624-8807 - 1:15 here. -

1:33 Brian 461-3717 - We keep 16 TRK for rebuilding - ROVING Records.

1:43 Jack Cashin 475-4987

2:02 Henry Lewin - 624-7821 He was on another line. Left my name & number

1:40 PAUL DUNCAN - 472-4775 Z - SMPTE ~~Reader~~ Reader but wants without case.

2:52 PAUL DUNCAN - 472-4775 Called him to quote $2500/UNIT & 3 WKS. was NOT IN.

2:57 Leo HUSEMAN - 879-5522 wanted to know why the invoice on the 40 TRK? I told him

3:03 Chase McVon 272-3388 told him about papers to be signed.

3:04 Paul Duncan 272-3388 quoted him $2500.00, he was in doubt & said he would call back. I doubt that he will buy.

3:19 Henry Lewin 624-7821 called. I told him probley a $500.00 chk will be sent out by wed. He asked for a status report Thursday.

8:10 John Eldridge 214-348-3935 Machine Down - Fivtter - Ø Lock. Wants Skiz - ~~the~~ Preamp chassis - Remote shuttle. 879-5522

9:45 Ed Cobb 788-1480 Meet @ 10:30 AM - Producer's Workshop.

2-11-75

9:55 JACK CASHIN 475-4987 - TOLD him machine will be in his place by 11:30 AM

9:57 Chase Mellon 272-3388 - Told him I will be in his office @ 11:00 AM

10:00 Alan Wiens 842-7551 - Sundie

10:02 Bill Sphull - 624-8807 Called, wanted to know when I would be in his office. I said I would after seeing Chase.

12:51 Harold Haines - UCLA 825-7915 NA.

4:33 Pete - SOUND LABS - 466-3463 Wants Stephens 24TRK. for rent. Look in future for sale of one or two 24TRKS to them. Want ~~[illegible]~~ 8110 SYNC panel.

4:44 TOM ~~[illegible]~~ - Wants check on car.

5:03 ED Cobb - 30V @ 15 IPS still too high. Is bringing in boards. I'll change FETS to T13's.

5:12 Tim Walker - 478-8227 was not in his office.

5:58 Pete - SOUND LABS - 466-3463 - 24TRK - Playback from 16TRK. Wants a 24TRK P.B. Head + Pre & Line Amps on MULTI Bracket. FIND OUT AVIL. of Head from AMC + chassis's & call him before NOON.

6:17 Rod 870-8011 has SMPTE GEN - OUTPUT poor DRIVE. Readout Chip Bad, is coming over @ about 7:00 PM.

2-12-75

APTS —

- BEAVER - Chase Mellon
- ~~[illegible]~~

2:00 PM - OLIVER $4000

IOU Rod - $2000.00

11:26 - Geo Smith - wanted to know if there was anyone that could build the 24 TRKS. I said I didn't know.

11:38 - NBC - ~~MR.~~ wanted to know track

11:42 - MR HAINES UCLA - TOLD HIM WE NEED A CHECK IN ADVANCE.

11:55 - AMC - Les ~~[illegible]~~ Johnson - Home sick - Bill Graham will call me after lunch on price & Delivery of a 24TRK play head.

12:01 - Pete SOUNDLABS 466-3463 told him we would not have answer until after lunch.

1:15 - Barbara - 415 457-4220 ROUND Records - wanted to know when their machine will be delivered. Wants to be called when its ready.

2-12-75

1:38 - Jack Cashin 475-4987 — WANTS @ 16TRK Between the 20th & 27th

1:47 - Bill Graham AMC — 24TRK. play head

4:21 - Chase Mellon 272-3388 (900 SUNSET BLVD.) Called is TWXing Release to Shpall on machine. Will try to get Monthly payments down to $1000.00 / with interest. Get the insurance on the Capitol equipment to be co signed by the Beaver Estate.

4:26 Tim Walker - Village went home for the day.

4:27 Bill Graham - AMC — Play head will be ready IN ONE week.

4:37 PETE SOUND LABS 466-3413 QUOTED 4000.00 & 2WKS TO ADD 8 more tracks to his 16TRK machine, PLUS ONE Play head. 2000.00 IN FRONT.

4:40 Jackson Baker 469-3103 - Wanted Remote & AUTO LOCATER.

4:45 Chase Mellon 1ST 3000.00 bal / @ 2000.00 ? Will work with Shpall to try to improve it.

4:52 JANET Frontier Audio 214-690-0055

5:01 Chase Mellon 3000.00 bal @ 10 DAY & 2000.00 / Month @ 7% / AN.

2-13-75 10:10 ERIC Presting 851-7818 - I'll be there @ around 1:15 PM.

10:14 Harold Haines UCLA 825-7915 Said he would walk through the paper work for the check.

10:34 DR. FORD 786-0995 - 4:15 -

10:36 DAVID - Hollywood SND. 465-6121 - Already handled by Mike. (600 a term.)

10:42 Janet - Frontier Audio 214-690-0055 - where is my motor. She will light a fire under whats his name.

10:54 Harold Haines 825-7915 Told him I was bringing over papers IN 45 MINS.

10:53 Bill Graham told him he might receive call from SOUND Labs to try to buy head.

3:06 Producers work shop 24TRK still has flutter. They are bringing in machine.

3:07 HENRY LEWIN 624-7821 Told his Associate NO money yet. Will call him when money Arrives.

4:03 TIM Walker — Has bias problems. Is Going to Advise that we get machine to improve Bias Regulation.

5:41 BRIAN has erase problem on TRK 9 -. ALSO when 24TRK?

6:45 - ERIC Prestige - wants me over to check 24 TRK IN MORN. Bring ALignment tape,

Jamie — 214-233-0906

2-14-75

10:24 CRIS SKEEN - WANTS SEARCH UNIT, WANTS TO BRING MACHINE IN FOR BIAS REF. UPDATE. I said about NEXT WED. He will call.

4:23 JOHN WHITMAN - HURT - VERT DRIVE TO LOCK UP, WOULD LIKE MACHINE BY 8:30 AM MONDAY. — 15 IPS - Recording MUSIC -

2-18-75

10:17 STEVE BARNARD - ROUND RECORDS - ROUND REELS EDDIE WASHINGTON WANTS A 16TH for his help in newdeal.

10:56 Harold Haines 825-7915 IASked if check was ready. He will call back.

10:58 Barbara 415-457-4220 Dean - I Asked for $10,000 on delivery of their machine TOMORROW. He will call back.

11: JOHN Richimann Beelman - Battery pack will be ready by the 20th. Call him when reading BC 212-247-8300 X 2301

~~Bill Rover - checked with him to see if check was mailed yet.~~ ILR-

11:26 BOB WANTED help IN KNOWING WHAT PARTS TO USE IN A PROJECT.

11:30 Harold Haines - Form 5 WENT down to a department & hasent been signed yet. Check wont be ready now UNTILL NEXT TUES.

2:30 Bill Spratt - WANTS EQUIPMENT Schedule

3:37 GARY BARNETT - Heads - WANTS TO build them.

3:54 - ALAN GASER - MONDAY NITE DINER 7:30 PM
2636 N. Beachwood 2-1775

4:12 DEAN LAYMAN - Doesn't have money there, I suggested they wire money TO OUR Bank from their BOSTON Bank TOMORROW & I'll Call Audio Ind. & TRY TO delay PICKUP of RENTAL UNTILL TOMORROW AFTERNOON. I AM TO call him back.

4:15 ALLEN Byers - was NOT there, BUT I Talked To his ASSISTANT. He said TO go ahead with the plan UNless I here from HIM.

4:19 BRIAN @ Paramount WANTS LE CONTROL @ 30 IPS P.B.

4:28 DEAN LAIMAN - WONDERS ABOUT INVOICES. ROUND Records 415-457-4220

4:42 DEAN LAIMAN - 415-457-4220
RON RAKOW - UPSET ABOUT INV. 1797

5:07 AUDIO IND. - Bob said Allen & Tom will be out tomorrow & will Talk about it then. → 789-4931
374 9045
Radio Shack - 845-1343

6:20 ED Lever Village Recorders - Noise on "PUNCH IN". What about MOTORS? IS SENDING IN Machine for ABOVE.

2-19-75

11:00 AM — Dean Leiman 415-457-4220 they are very short of money. Will pay Rental charge 3 today, but can't pay partial bal on Machine until Friday.

11:45 John Freshette — NBC 845-7000 X 2241 — SKIZMATIC
1:30 PM John Deilman X2301 212-247-8300

11:51 John Deilman 212-247-8300 X 2301

12:22 Brian — wants me over there @ 4.00 P.M. with 25-0 Tape, Call First.

3:08 845-7000 X 2241 NBC John Freshette. wants Dialogs. tomorrow.

3:18 MR. Borges 504-834-5711 — 24TRK Needs 24TRK for rent. I suggested that he call Dean Acheson @ Frontier Audio
3116 Metairie Rd., Metairie, LA 70001

3:23 Jean Peterson — AMC took her our check Bounced. — I will call her tomorrow & Let her know if Money

3:33 Dean Leiman 415-457-4220 — ~~He~~ Ron Doesn't want to pay all of the rent due to Promise from ~~He~~ me that Max will be $2400.00

3:49 Brian — Paramount 461-3717 — Studio won't be clear until 5:00 P.M.

3:57 Dean Leiman 415-457-4220 — $2200.00 ~~Min~~ will be wired to our bank in the Morning. I agreed to the lower rental charge. Ron states that I promise the MAX. would be $2400.00, He will agree to a 700.00 increase over that but no more than that.

4:24 Ted Noval — Tape lifter on 40 TRK not working. Out of adjustment. He will Correct,

6:00 Brian — Paramount — wants Black Anodized Sync Panel. I am to pick up 24 TRK tomorrow & deliver to Audio Arts for the day.

2-20-75

10:56 Ed Cobb — 462-0409 — Told him what Sandy Freedman said to Chris. about taking his sweet time in paying the money they owe us.

11:05 Bolic — Mully Ana 678-2832

12:22 KCET — John Whitman ~~&~~ problems with resolver, He will call back.

12:36 KCET — John Whitman — I said I would see him in 35 min's.

3:41 Jim Cooper UCLA Music Dept. — Said check will be cut tomorrow morn. He will call back Time & where to pick it up.

3:51 Jim Cooper UCLA — Murphey Hall 2337 — Pickup any time.

5:52 David — 4TRK Hollywood Sound — 4 TRK blows fuses. +

~~651 5474~~ ~~634 6190~~ 853 3412

2-21-75

10:30 AM AMC Jean peterson — told her that I should have money by monday. I will call her monday.

10:56 AM Dean Leiman 415-457-4220 told him that I'm picking up rental today & delivering the new one sat. He will have info on money by tues.

11:02 Bob Weir's home 415-388-1473 told a girl there that I was on my way to pick up machine

TOM Harvey 762-7825

loaned 1 set DTK Cables to Tom Harvey

2-25-75

2:10 Craig Curtis - NBC 845-7000 X2244 we will send the discs in one hour.

2:11 AMC Jean peterson — told her to deposit check tomorrow.

2:14 Jeff Baking - Sound Ideas - 212-575-1711 RTN call — talking about a 24trk. wants it in 3 wks. I said no can do — 5 wks. wants to pay 24 ~~000~~ 00 with search unit + spares. I said ok. He will call back.

2-26-75

4:03 Dean Leiman 415-457-4220 - won't know about money until next mon. or tues.

4:52 Dean Leiman " I want $5000.00 wired to our bank

5:16 Ron Rahow " He is going to bank to apply pressure.

2-27-75

1:48 Ted Rothstein 914-679-8900 convert to 24trk. Gave him 10,000.00 ± cost of 16trk heads.

3:34 ~~Ron Rahow~~ Dean Leiman 415-457-4220 - Will wire $5000.00 in morn.

3:46 Bill Rogers - 556-4300 not in. I will call him about 5:30 pm.

2-27-75

3:56 – RAY Boyle 883-9959 Breakthrough INC. – NO. ANS.
They developed a UNIT. 8TRK cartridge

4:58 – Brian 461-3717 –

6:00 – Bill Rogers 658-4300 NOT IN.

8:10 – Glen Pace – Bias osc.? Remote?

2-28-75

1:59 – Bill Rogers 656-4300 We should Rec'd Chk 4 Days After delivery

2:04 – Galen – producers ~~213-3060~~ ~~469-2123~~ 462-0409 = TRANSPORT R.S. – NOT START UP.
have it ready by 5:00 PM

2:09 – Don Fish – 801-374-1211 x 4151 (will) ORATATRON – L.A.? Glen Glen
Call – API?

3-3-75

Orvid – Hollywood SND. – Wants OLD Drawings

3-4-75

11:54 Leo will send 4TRK over to repair deck.

11:55 Jack Cashin 475-4987 wants his 8 TRK by Tomorrow

3-5-75

2:02 Chuck Klaus – Premore 870-6011 NOT IN

3:59 Chuck Klaus – Premore 870-6011 – wants 2TRK.

4:12 Chuck Klaus – 15/30 NAB reels wants paper work – $4500.00 WITH SMPTE Resolver.

3-6-75

11:13 MR Barsotti – 415-469-1326 WANTS 8 TRK BUT WITH 16TRK.

11:30 Bill Graham – RMC. asked him for delivery of 1 set 24TRK & 1 set 16TRK. He will call back

11:34 MR. Barsotti – 415-469-1326 – TOLD him 8TRK 11,200.00 + TAX. with 16TRK harness would be $14,200.00 (8 TRK SYNC Panel to be traded in when they go to 16TRK)
(WANTS 24TRK by 3-24-75) – ERIC Prestage 851-7810 .5% SVM – 842-3444 NOT WORKING 769-4931

.05-49 .19

SVM Weston 4443 ~~250.00~~ 4440 – 269.00

2¼" X 5½" X 7" TRK IT #16

IKE Moore

9:15 – PM 25°

3-6-75

11:46 - ERIC prestige 851-7818 wants 24TRK by 5-24-75 he will call back.

2:06 - JOHN Dea/man - 212-247-8300 X2301 N.B.C. NOT There

2:07 - Eric prestige 466-4306 NA

2:08 - Tom Russel 918-582-5212 Gone to Bank - will call back.

2:14 - B, H Graham Adv said we could have 16TRK IN TWO WKS. Problay 24 by 19th,

2:29 - TOM RUSSEL - 918-582-5212 WANTS ON 8 TRK., IN May, Gave him a discount of $350.00 if DOWN IS ½ with order.

2:37 - ERIC Prestige 466-4306 - will call by NOON TOMORROW ON 24 TRK. I QUOTED 25000 with ½ DOWN.

3:06 - Bob Bosler - 391-6084 - WANT More INFO ON 2 TRK & 4 TRK. They WANT TO build electronics.

3-17-75

1:05 - Dean Leiman 415-457-4220 He will call me back as To How They will pay balance.

1:24 - RON RAHON " " " Wants extra prices of Remote SYNC Panel & 821 panel.

3-18-75

1:40 Dean Leiman 415-457-4220 Gave him prices of 821 conversion & Remote panel RON should call me Tomorrow.

1:52 Eric Prestige 851-7818 - NOT SURE BUT THINKS they are NOT Going To buy a machine.

2:02 Richard Hoffman - 656-4300 They have check for us.

2:36 Geo Smith - 469-2241 Gave him Dolby INTERFACE CKT. & PIN NOS

5:06 FRONTIER AUDIO - John ELORIAGE -

3-19-75

12:46 MR Bickerstaff 420 4212 L.B. City College OUT TO LUNCH. PARTY.

12:48 212-247-8300 DICK AMO N.B.C. he will be told that I will have SYNC Sep. System for them by middle of NEXT week.

3:29 OXNARD - ALAN GLASSER TRADE WINDS - for 3 WKS. Staying at Wagon Wheel Motel

3-20-75

4:49 DEAN LEIMAN 415-457-4220 - they will send ~~$12,500.00 DOWN~~ - Build NEXT Tues.

3-26-75

3:30 Dean Leiman 415-457-4220 He will have Ron Ramon call me.

3:40 Rod Taylor - Greatful Dead talked to Don Heilpy 415-388-9995 - Rewind doesn't operate properly Near end of reel. I told him I'll be up there Next week.

3:50 Lawrey Goldberg - 660-1605 Shelter records he will call back.

3:55 MR. ~~[illegible]~~ FINSKY National Accept. 651-5400. Wanted to loan us

4:00 Bob Conrad 277-7042 Told him I would call him back 1st of NXT week when I talk to My Lawyer.

4:10 Geo Smith 469-2241 — Not in. Called @ 4:45 ~~Delt~~ Told him delivery in 3rd or 4th wk of April.

4:15 John Harkin 913-582-5217 Wants cables long enough to go to bottom of cabinet. Wants Cables to be sent in Advance. Wants machine by May 15th in L.A.

4:23 Bill Graham AMC — 16TRK headset Ready to ship in two days. 40TRK set Delivery in two week.

4:45 John Harkin 918-582-5212 - told him they could have 40TRK by May 15th

3-27-75

11:50 Lawrey Goldberg - Shelter records - 660-1605 - in a meeting.

1:55 Dean Leiman 415-457-4220 — He will call me in ½ hr to 45 mins.

1:58 Ira Chandler - Stereo world 813-988-7059 8 track - wants L.T.

3-28-75

4:04

10:46 Joe Klein 65-9-3940 — Production company - interested in 16TRK. - Will see me at the AES show

12:46 Dean Leiman 415-457-7220 Will send check by mail today due to banks closing early.

3-31-75 Howard Idlebock 212-247-8300 x2995 Not in.

2:32 Eric Prestage — machine down @ Sound Labs —

MAY-13-K

SOUND LABS INC.
1800 N. Argyle Avenue · Suite 202
Hollywood, California 90028
466-3463

From the desk of

DYNAMIC BRAKING

AS LONG AS RATE GENERATOR IS SPINNING, Q25 STAYS ON AND Q27 STAYS ON

Q26 IS PLAY MODE XISTOR — ON DURING PLAY, IT DEFEATS TAPE LIFTER CIRCUIT

IN PLAY — SHUTS OFF "PRE" LIGHT

THEN Q24, Q12 SHUTS OFF ... Q12 THEN SHUTS OFF Q15

DIFFERENTIAL AMP DRIVES Q21 INTO SATURATION WHICH TURNS ON SUPPLY MOTOR

File #
Tour: 821-A
Supreme

11/5/85

Checked out Stephen's 24 track machine with 16 track heads,

Did 15 ips Play back + Record Alignment
(+3, 15 ips, 456)

Unweighted flutter: .06 %

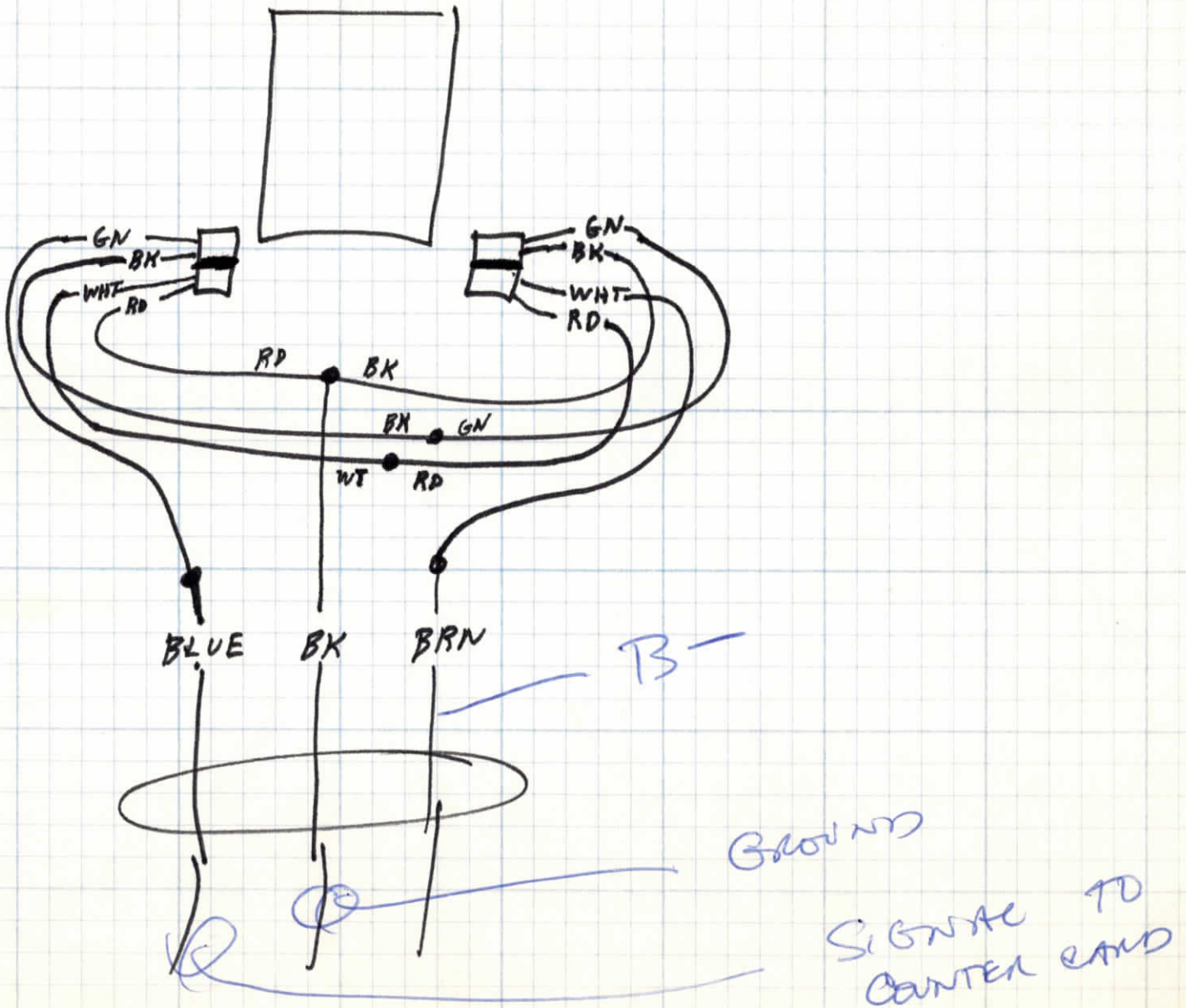
unweighted Noise: 50 dB typical
(Below +4)

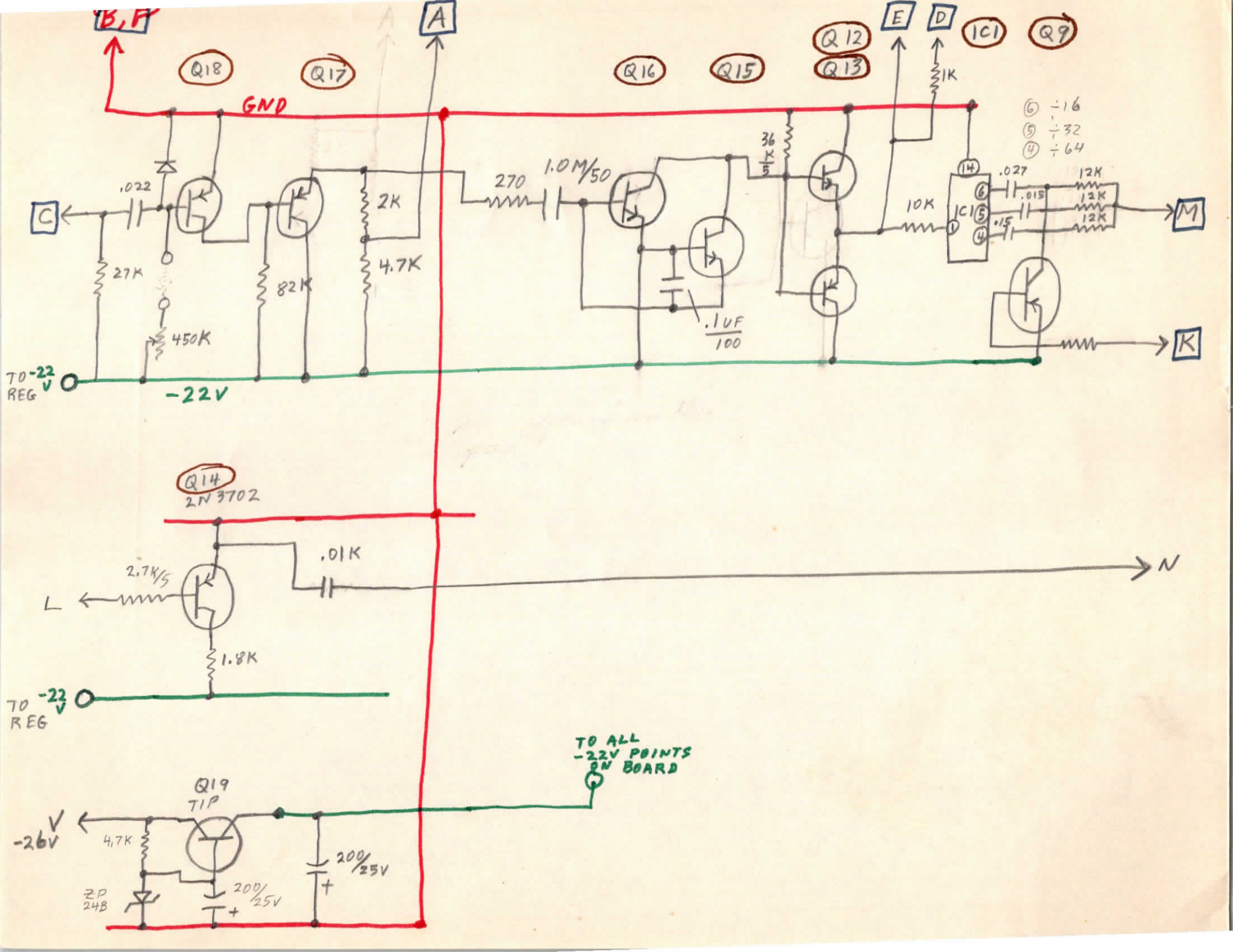
Tried to get #2 + #6 channels to mess up during this whole time — But they remain working. I could not spot anything else out of the ordinary

Jeff

STEPHENS 16TK
MODIFIED TO
DUAL SENSOR
9-3-74 (B)

FRONT VIEW

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STEPHENS 24
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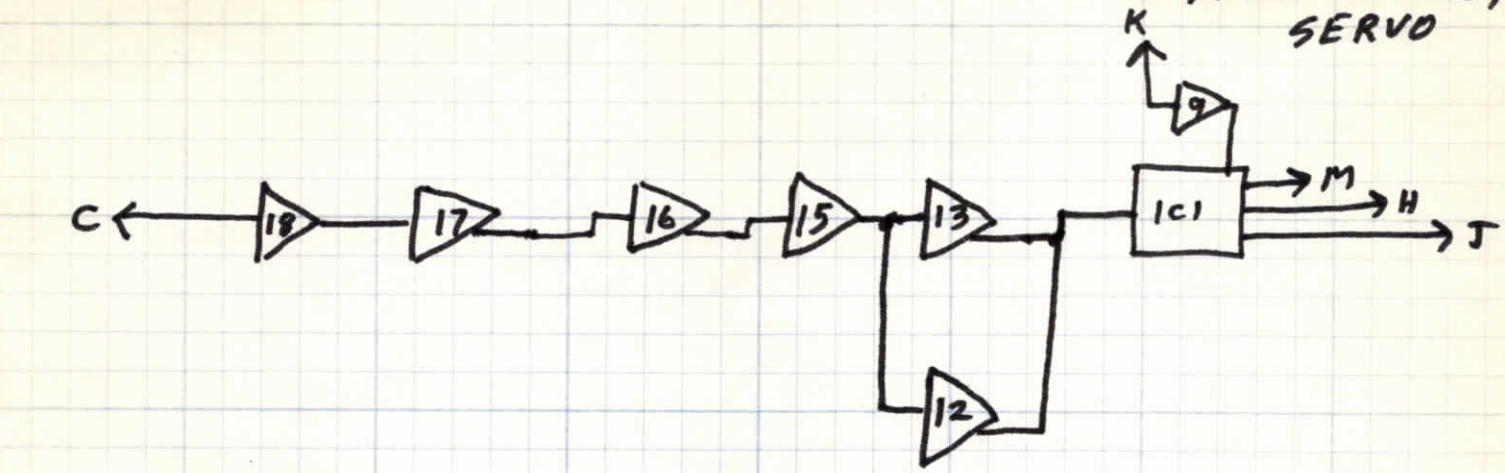

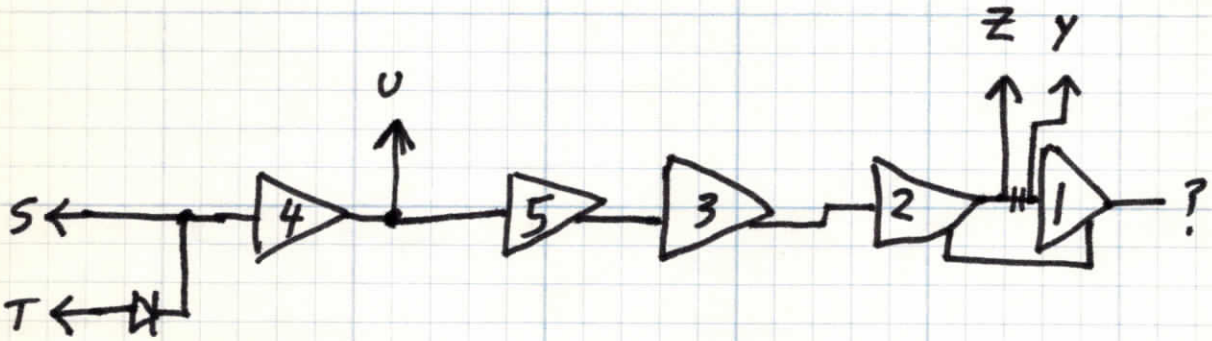

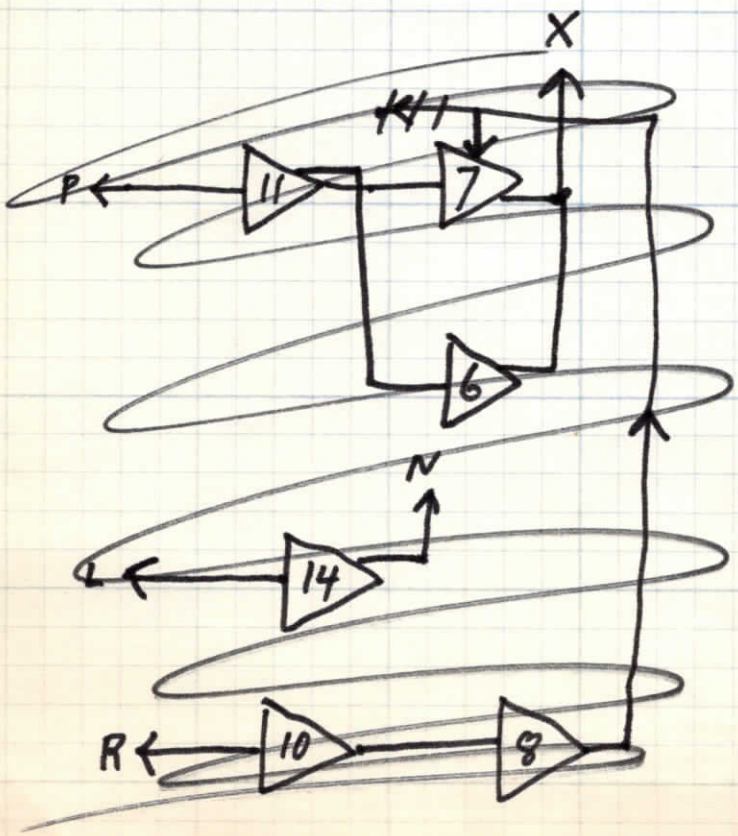

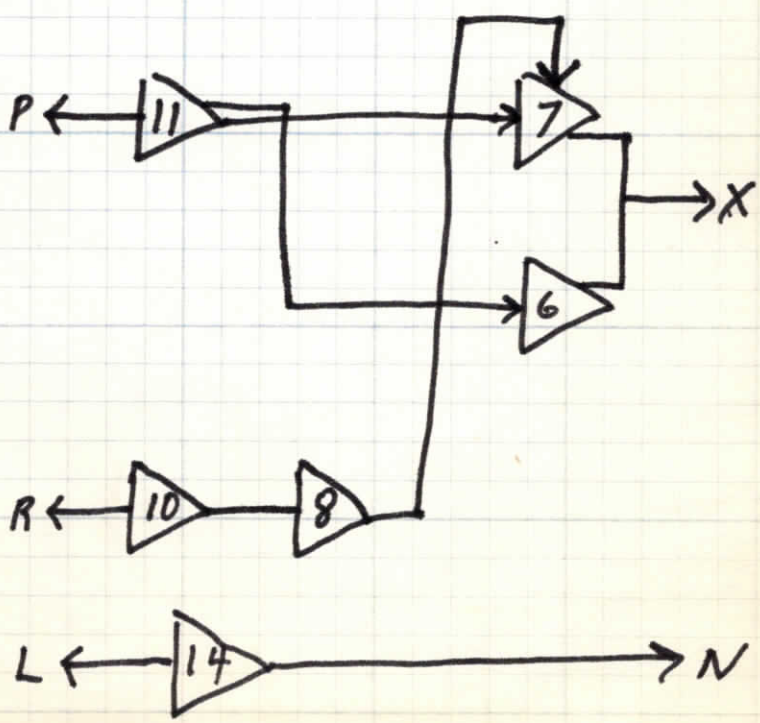

http://www.Collector-club.com/DET/mailfiles/howto.html
/instruct.html

Frederick Hunrath <fritz1234@earthlink.net>

VGA.DRV

[Oracle][ODBC Oracle Driver][Oracle OC]
ORA-12500; TNS:listener failed to start a
dedicated server process,
|| global.asa, line 13

where is → sodbc250.vbf → CTL3DV2.DLL → Window/System

//www.MUNSHI.SONOMA.edu/jamal/weird.html

BUILD *,*

34.45N 120.34W

MAIN-progMAN

Properties
settings
Color palette
Display area
→ true color 24 bit

www.airmail.net/help/accr_update.html

Launch 628 12 — 46 93 — 16BIT 65536

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realplyr\g2\realplay.exe

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LA 90038

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.253 .287 .298

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.018 .053-.055 .149-.150 .279 .280
.056-.064 .134-.145
.004-.006 .002 .003 .015
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6.3 mb 185 188 190 191
192 193 195 196 198 199
202 203 205

Fritz

16 09:47:08 33.3 7 117.86

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24 - 118

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CUSTOM BULLETIN RETRIEVAL REQUEST

BULLETIN: SEL1

DATE: 1999-10-04 1999-10-08

I Get MAP

I Don't Get The EVENT LIST. Most of The Time

/Victor_red/yuki_matsuura.html

/field/1618/yuki_matsuura.htm

tub - Cache 2

1-800-525 5522, Hart

990329.htm

990408

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1Z4E530W4344562657
Ann: 4.27.00

IN h'29
ANI h'01
269
283

X6B8
→ 6D2

6D6
6D9!

6BA

X6D6

5AE

662; 16mm 18fps
664; 16mm 30fps
66A; 35mm 30fps

5D6

32A7
32A9
32CD
32DB.DB
32DC.DB
32EB
32FD
→ B5
64B6

H on SW.
3285.DB
3286.DB

3279
3285
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32DB 32DD
32ED 32E3
32F3 32E9
32E3 32EF
32F5

X5D6
X5DC → L64AF
X5E2
X5E8
5EE 3253
5FH
5FAV 64B6
600
606
60C 32FB
617
618
61E
→ 624
62A 654
630 65A
636
63C
642
648
64E

3270 327F

SEARCH

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044E 0534 044D 44FB

2287, 228A 228D 22A3 22AE 22C4, 22DA

223C X2219 - DRL

2245 X22F2 - DRL L2300

224E - L2344

2257 5BE4 - 1669

-NBC4- 22F2 X221B

VOIXX 22DA X221D

Alzheimer's 22F2 X221F

816 X2221

X2223

"THE TOTAL RECORDER"

X226D DRL

..X22774]

23C9 L2275

+TRACE

22DD

2216 FE612J L7C2F

2A1C 7C0F

X2101 - 21DA TRA E8 7BFD

TRB E9

23F9 TRC EA 7BFA

FE6125- 7BDB

2184 796 7BD6

The STEPHENS uniquely compact flexible Q-II autolocator system is deceptively simple to operate. However, since it is also a very powerful recording tool, you should READ THIS MANUAL THOROUGHLY BEFORE attempting to operate the transport.

All the normal pre-operation procedures should be complied with. Load the machine with tape according to the Operation and Maintenance Manual instructions for "play".

The Q-II autolocating microprocessor system gives 10 program storage capabilities. All programs are randomly accessible either manually or automatically. Programming is performed via the remoted Q-II control panel's keyboard.

GLOSSARY

BLANK:
A blank button on the QIIA control panel, used to modify the QIIA software.

NOW:
Indicates the program that the Q-II autolocator is currently using.

NEXT:
Indicates the next program to be used when the current program is complete.

MODE:
Indicates how the transport will operate when the displayed program is executed. The digit "2" will cause the transport to play, the digit "4" to shuttle (rewind or forward). All other numbers will stop the machine.

DESTINATION:
A four digit display, in footage, of the location the transport is to go to.

CURRENT:
A four digit display of the position of the tape on the transport, or when programed, the tape speed.

PROGRAM:
One complete set of instructions for the transport to follow stored as one program.

Example:
1. Go into a play or shuttle mode.
2. Seek a location.
3. Upon reaching the location execute the next program.

The QIIA can store ten programs.

START:
A button on the Q-II control panel. When pressed, it initiates automatic Q-II control of the machine. The program that is displayed will now be executed.

TO OPERATE

1. Press program store (PROG STORE); button will flash. First number in display will flash.

2. Press the number of the program you will be setting up. The number will display in the "NOW" window.

3. Press the number of the program that you will be using "NEXT". The "flashing" will move toward the right as you make each entry.

4. Select the desired operating mode: 2 for "PLAY", or 4 for "SEARCH".

5. Enter a four digit destination footage number.

   NOTE: YOU MUST ENTER ALL FOUR DIGITS.

   Example: If footage number is 550 ft., you must enter 0550.

6. Repeat steps 1 thru 5 as necessery.

7. If it is desired to change the footage count (CURRENT), press footstore (FOOT STORE), and enter a four digit current footage number.

Now press START and the locator will operate the transport.

PROGRAMMING "ON THE FLY"

See "DUMP" on page 5.

A SAMPLE PROGRAM FOR STEPHENS QIIA

TAPE FOOTAGE	SONG STRUCTURE
0000-0039	Intro
0039-0100	Verse 1
0100-0256	Chorus 1
0256-0317	Verse 2
0317-0497	Chorus 2
0497-0700	Solo
0700-0761	Verse 3
0761-1138	Vamp chorus to fini

Producers request:
"Play only the verses 1 thru 3, then play the vamp to fini. Keep repeating it.

NOW	NEXT	MODE	DESTINATION	DESCRIPTION
1	2	4	0039	Shuttle to 39 feet.
2	3	2	0100	Play to 100 feet.
3	4	4	0256	Shuttle to 256 feet.
4	5	2	0317	Play to 317 feet.
5	6	4	0700	Shuttle to 700 feet.
6	1	2	1138	Play to 1138 feet.

Notice that "NEXT" links or calls the next program when the tape reaches the "DESTINATION", I.E. When the footage count dislpayed in "CURRENT" equals the footage count displayed in "DESTINATION".

Example 2: Repeat Solo over and over again.

NOW	NEXT	MODE	DESTINATION	DESCRIPTION
7	8	4	0497	Shuttle to 497 feet.
8	7	2	0700	Play to 700 feet.

The above will contiuously replay the solo - for overdubs, mixing, - whatever.

Example 3: Play and repeat the complete song.

NOW	NEXT	MODE	DESTINATION	DESCRIPTION
0	9	4	0000	Shuttle to zero feet.
9	0	2	1138	Play to 1138 feet.

EXPANDED INSTRUCTIONS

BLANK

When the blank button is pressed, the PROG SELECT button will start to flash. Pressing the following numbers will impliment the following changes;

1: The CURRENT window will display time at 15 IPS.
2: The CURRENT window will display footage.
3: The CURRENT window will display time at 30 IPS.
4: The CURRENT window will display the tape speed.
9: The CURRENT window will display the software version. (0883)

NOTE; QIIA cannot be programmed in "time." Therefor, when programming, the CURRENT display will display footage. When programming is complete, CURRENT will change back.

START

Initiates automatic control of the machine. The program displayed is then executed. To regain manual control of the machine, press STOP. If a program is manually stopped anywhere before it finds a location, pressing START will reinitiate the program at the point where it was stopped.

DESTINATION

The footage number that the displayed program will shuttle or play to.

DUMP

When pressing DUMP and then an unassigned program number, the "CURRENT" footage is loaded into the destination footage counters. The number pressed is automatically loaded into "NOW" and "NEXT", and the "MODE" window is loaded with the digit 4, indicating shuttle. This location can now be called at any time by pressing Program Select (PROG SELECT), the number and START. The machine will then fast shuttle to that destination and park. The QIIA will then disengage and the START light will go out. If START is pressed twice in succession, the machine will fast shuttle to the DESTINATION and go into play mode. The QII will then disengage and the START light will go out.

COMMAND CONTROLS

NOTE: When either FOOTSTORE, PROGRAM STORE, PROGRAM SELECT, or DUMP are chosen, one number in the digital display as well as one of the above buttons will flash, indicating a "ready to receive instruction" mode. The desired numbers can be loaded in via the keyboard with each digit appearing as it is selected.

FOOTSTORE

Allows manual change of the current footage display, i.e., at 78 feet into the tape, the operator decides he wants the current display to read "0000".

PROGRAM SELECT

When pressed, the PROGRAM SELECT will flash until a number is pressed. This becomes the program number. The display will then display this program.

PROGRAM STORE

Press Program Store (PROG STORE), the PROGRAM STORE button will start to flash as well as the first digit in the display window.
NOTE: (SELECTED NUMBERS WILL SHOW FROM LEFT TO RIGHT IN THE DISPLAY WINDOW AS THEY ARE ENTERED INTO PROGRAM STORE VIA THE KEYBOARD).

Punch in the numbers just as you would a telephone number 1240039 (1=NOW,2=NEXT,4=MODE,0039=DESTINATION).

To set up subsequent programs, repeat the sequence of keystrokes denoted above. However, the order of "NOW" to "NEXT" does not have to be in numerical order. The program can be set up to go from program 1 to program 4 to program 9 etc.

END.